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ΕΘΝΙΚΟΝ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ

RESEARCH CENTRE FOR GREEK AND ROMAN ANTIQUITY
NATIONAL HELLENIC RESEARCH FOUNDATION

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CHARIKLEIA PAPAGEORGIADOU-BANIS

THE COINAGE OF KEA

ATHENS 1997

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To the Memory of my father

TABLE OF CONTENTS

Foreword	iii
Abbreviations	iv
Introduction	vii
Chapter 1: Geography and History	1
Chapter 2: Numismatic Types	11
Chapter 3: Numismatic Series	19
Chapter 4: General Characteristics and Chronology	53
Chapter 5: Metrology and Technique	59
Chapter 6: Circulation of Coins	67
Chapter 7: Numismatic Evidence and History	71
Catalogue	75
Plates	109

FOREWORD

The islands of the Cyclades as a whole have an interesting historical past and a profusion of archaeological remains. Numismatic studies of them, however, are few. The sole exceptions are the earlier publications of Svoronos on Mykonos, Paschalis on Andros and Lambros on Amorgos, and more recently a succession of studies have appeared about Tinos by L. Gyselen and R. Etienne and about Paros, as well as a survey of Archaic mints, by K. Sheedy.

A study of the coinage of Kea formed part of the surface survey of the island that began in 1983. A preliminary version of it was submitted in 1988 as a doctoral thesis to Athens University.

In numismatic studies the compilation of a catalogue of the existing material constitutes the central core, and my first thanks are due to those who have assisted me in this. The late M.J. Price of the British Museum, Hélène Nicolet and Dominique Guerin of the Bibliothèque Nationale, Dr H. Schultz of the Berlin Museum as well as all the Directors and Keepers of Museums and Numismatic Collections, who provided me with photographs and casts. Numismatic material was also made available by Elizabeth Schoffield, which enabled me to study the coins from the excavations at Ayia Eirene, and by the Ephor of Antiquities, Evi Touloupa, who gave me permission to include in my study all the coins found at different times on Kea.

I must also express my gratitude to professors R. Etienne, B. Helly and G. Rougemont, who, during my short stay at Lyons, had the patience to look at my work and give me useful advice on the direction it should take. From Dr Sheedy I received specially valuable help, to which many things in this study are due. Also very valuable was the guidance of Dr Y. Touratsoglou, whose broad vision opened up new horizons for me in numismatic research.

I should also like to express my deep gratitude to Dr Mando Oeconomides, Emeritus Director of the Numismatic Museum, whose advice during the completion of the study was decisive, as were my years of study with her.

I am also grateful to Dr A. Rizakis, the Supervisor of the Programme for Southern Greece, of which I have been a member since 1985, to whom I owe many important corrections to my study, and also to the former Director of the Centre for Greek and Roman Antiquity, the Academician Professor M. Sakellariou, for his support.

I would like to express my gratitude to the Director of KERA, Dr M.B. Hatzopoulos, who took a close interest in my work and to whom its publication is due.

Finally, my warmest thanks are due to my husband, Konstantinos Banis, who supported my endeavours and put up with my worries.

ABBREVIATIONS

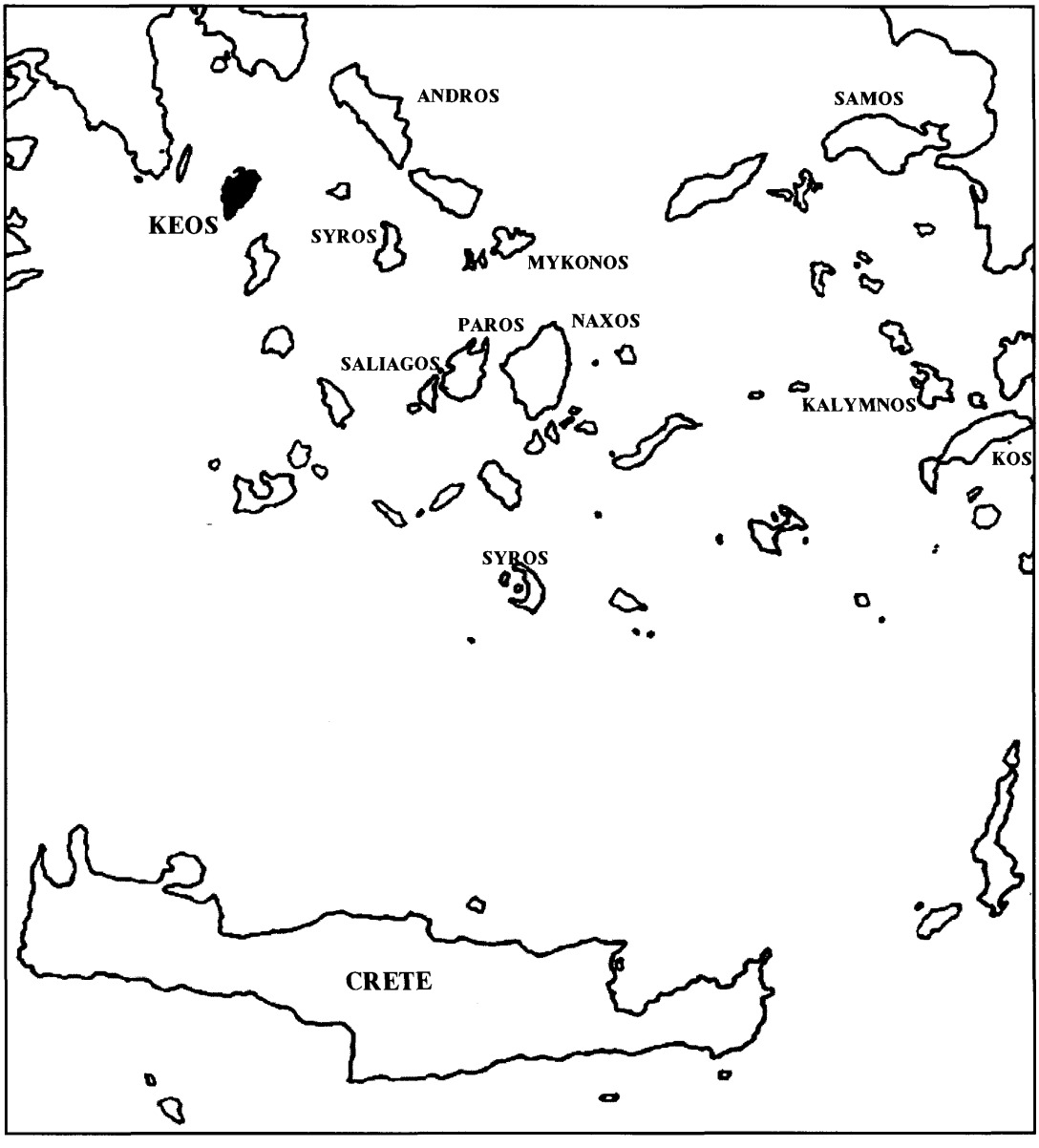
The abbreviations in the *Archäologische Bibliographie* are used for general reviews, and those in *Numismatic Literature* for numismatic periodicals. Where the numbering of the volumes changes according to the series, only the year of publication is given. In addition to the above abbreviations, the following are also employed:

ACGC = C.M. Kraay, Archaic and *Classical Greek Coins*, California 1976
Asyut Hoard = M.J. Price, N.M. Waggoner, *Archaic Greek Silver Coinage. The "Asyut" Hoard*, London 1975
Bloesch = H. Bloesch, *Griechische Münzen in Winterthur*, Winterthur 1987
BMC = W. Wroth, *Catalogue of the Greek Coins in the British Museum. Crete and the Islands*, London 1886
Boutin = S. Boutin, *Catalogue des monnaies grecques antiques provenant de l'ancienne collection Pozzi*, Maastricht 1979
Brett = A. Baldwin Brett, *Catalogue of Greek Coins. Museum of Fine Arts*, Boston, Boston 1955
CH = Coin Hoards III, London 1977
DEA XXVII = P. Bruneau, N. Bech, P. Fister, *L'îlot de la maison des comédiens*, Exploration archéologique de Délos XXVII, Paris 1970
Deppert-Lippitz, *Milets* = B. Deppert-Lippitz, *Die Münzprägung Milets von vierten bis ersten Jahr. v. Chr.*, Typos V, 1984
Dewing = L. Mildenberg, S. Hurter, *The A.S. Dewing Collection of Greek Coins*. Ancient Coins in North American Collections, New York 1985
FITA = M. Grant, *From Imperium to Auctoritas. A Historical Study of Aes Coinage in the Roman Empire, 49 B.C.-A.D. 14*, Cambridge, Melbourne, New York 1978
Forrer = L. Forrer, *Descriptive Catalogue of the Collection of Greek Coins formed by Sir Hermann Weber*, London 1922-1929
Froehner = W. Froehner, *Collection Photiades Pacha. Monnaies grecques anciennes*, Paris
Gr. M. = F. Imhoof-Blumer, *Griechische Münzen*, München 1890
Grose = S.W. Grose, *Catalogue of the McClean Collection of Greek Coins I-III*, Cambridge 1923-1929
HN = B.V. Head, *Historia Numorum. A Manual of Greek Numismatics*, Oxford 1911 (reprint 1977)
Hübl = A. Hübl, *Die Münzsammlung des Stiftes Schotten in Wien II*, Wien, Leipzig 1920
IGCH = M. Thompson, O. Mørkolm, C.M. Kraay (eds.), *An Inventory of Greek Coin Hoards*, New York 1973
Jameson = R. Jameson, Collection R. Jameson. Monnaies grecques antiques, Paris 1913-1932
Kroll, *Agora* = J.H. Kroll, *The Greek Coins, The Athenian Agora 26*, Princeton 1993
Landscape Archaeology = J.F. Cherry, J.L. Davis, E. Mantzourani, *Landscape Archaeology as Long Term History. Northern Keos in the Cycladic Islands. Monumenta Arcaeologica 16*, Los Angeles 1991
Leake, *Num. Hel.* = W.M. Leake, *Numismata Hellenica. A Catalogue of Greek Coins Collected by W.M. Leake*, London 1854
Leake, *Suppl. Num. Hel.* = W.M. Leake, *A Supplement to Numismata Hellenica*, London 1859
McDonald = G. McDonald, *Catalogue of the Greek Coins in the Hunterian Collection I-III*, Glasgow 1899-1905
Müller = L. Müller, *Musée Thorvaldsen. 3ème partie, antiquités, section IV*, Copenhagen 1851
Naster = P. Naster, *La Collection Lucien de Hirsch*, Brussels 1959
Numismatique antique = J.M. Dentzer, Ph. Gauthier, T. Hackens (eds.), *Numismatique antique. Problèmes et Méthodes*. Études d'archéologie classique, Nancy, Louvain 1975
Regling = K. Regling, *Die griechische Münzen der Sammlung Warren*, Berlin 1906
Reisen = P.O. Bröndsted, *Reisen und Untersuhungen in Griechenland I*, Paris 1826

Robinson = E.S.G. Robinson, *Catalogue of Ancient Greek Coins collected by G. Locker Lampson*, London 1923
Rosen = N.M. Waggoner, *Early Greek Coins from the Collection of Jonathan P. Rosen*, Ancient Coins in North American Collections, New York 1983
Sartiges = *Collection du Vicomte de Sartiges. Series grecques et romaines*, Paris 1910
Seltman = C.T. Seltman, *Athens. Its History and Coinage before the Persian Invasion* Cambridge 1924, Chicago 1974 (2)
SNG Aarhus = Sylloge Nummorum Graecorum, Aarhus University, Denmark, 1968
SNG Cop = Sylloge Nummorum Graecorum, The Royal Collection of Coins and Medals, Danish National Museum, Copenhagen 1940
SNG Del. = Sylloge Nummorum Graecorum, France, Bibliothèque Nationale, Cabinet des Medailles, Collection Jean et Marie Delepierre, 1983
SNG Leake = Sylloge Nummorum Graecorum, English Collections IV, Fitzwilliam Museum: Leake and General Collections, 1940
SNG v. Aulock = Sylloge Nummorum Graecorum, Deutschland, Sammlung H. von Aulock
SNG Tüb = Sylloge Nummorum Graecorum, Deutschland, Münzsammlung der Universität Tübingen, 1981
SNG Lockett = Sylloge Nummorum Graecorum, Vol. III, The Lockett Collection, London
SNG Finland = Sylloge Nummorum Graecorum, Finland, The Erkki Keckman Collection in the Skopbank, Helsinki, 1994
Svoronos, *Πτολεμαῖοι*=Ι. Ν. Σβορῶνος, Τὰ νομίσματα τοῦ κράτους τῶν Πτολεμαίων, Ἀθῆναι 1904
Ténos = R. Etienne, *Ténos II: Ténos et les Cyclades du milieu du IVe siècle av. J.C. au milieu du IIIe siècle ap. J.C.*, Bibliothèque des Écoles Françaises d'Athènes et de Rome 263 bis, Paris 1990
Traité = E. Babelon, *Traité des monnaies grecques et romaines, I-IV*, Paris 1901-1933
The Elder Turtles = R.R. Holloway, *The Elder Turtles of Aigina I, II*, Princeton University PhD, 1960
Voyages = P.O. Bröndsted, *Voyages dans la Grèce accompagnés de recherches archéologiques, et suivis d'un aperçu sur toutes les entreprises scientifiques qui ont eu lieu en Grèce depuis Pausanias jusqu'à nos jours I*, Paris 1826
Walker = A. Walker, Ancient Greek Coins. The Credit Bank Collection, Athens, 1978
Wiczay = C.M.A. Wiczay, Musei Hedervarii in Hungaria numos antiquos graecos et latinos descripsit C.M.A. Wiczay, Vindobonae 1814

The following references to museums and collections have been used:

Athens = Numismatic Museum
Athens, Credit Bank = Athens, Collection of the Credit Bank
Ay. Eirini = Kea, University of Cincinnati. Kea Excavations
Berlin = Staatliche Museen zu Berlin
Boston = Museum of Fine Arts
Brussels = Bibliothèque Royale Albert 1er
Budapest = Magyar Nemzeti Mùzeum
Cambridge = The Fitzwilliam Museum
Constantinople = Istanbull Arkeoloji Müzeleri
Copenhagen = Nationalmuseet
Dresden = Staatliche Kunstsammlungen Dresden
Glasgow = Hunterian Museum
Hague = Koninklijk Kabinet van Munten Penningen en Gesneden Stenen
Karlsruhe = Badisches Landesmuseum Karlsruhe
Kärnten = Landesmuseum für Kärnten
Kea = Ioulis Archaeological Museum
Manchester = The Manchester Museum
Munich = Staatliche Münzsammlung
Naples = Museo Archeologico Nazionale
New York = American Numismatic Society
Oslo = Universitetet i Oslo. Myntkabinettet
Paris = Bibliothèque Nationale. Cabinet des Médailles
Princeton = Princeton University. The Library
Strasbourg = Bibliothèque Nationale et Universitaire
Thorvaldsen = Copenhagen, Thorsvaldsen Museum
Venice = Civici Musei Veneziani d'Arte e di Storia
Vienna = Kunsthistorisches Museum. Sammlung von Medaillen, Münzen und Geldzeichen
Vienna, Stiftes-Schotten = Universität Wien. Institut für Numismatik
Winterthur = Münzkabinet der Städtbibliothek


ANDROS
SAMOS
KEOS
SYROS
MYKONOS
PAROS
NAXOS
SALIAGOS
KALYMNOS
KOS
SYROS
CRETE

INTRODUCTION

Archaeological investigations on Kea began a long time ago. Well known to travellers and sightseers because of its position on the sea routes, it also soon became well known because of the wealth of its archaeological finds. The Swedish traveller P.O. Bröndsted in 1826 was the first to make a systematic study and catalogue of the antiquities on the island, and this was followed later by more organized investigations, like those of P. Graindor at the beginning of the 20th century at Karthaia and of the Greek Archaeological Service from 1937 onwards. Since then archaeological research has continued with excavations or surface surveys until the present day with important results.

From a numismatic point of view, however, the situation is different. Bröndsted was the first to attempt a general presentation of the coins of Kea, illustrating coins that had either been found in the course of his researches, or had come into his possession in various ways. He also wrote (*Reisen*, 123, n. 2 and 126, pl. XXVII) that he intended to devote a second part of his work solely to the coinage of the island. The majority of his attributions were correct and are still currently accepted. Much later, I.N. Svoronos, probably in the context of his special study of the Cycladic mints, which he had begun to publish, apparently aimed at a complete study of the Kea mint. This also emerged from the writings of others, like D. Paschalis, whom Svoronos had helped in his study of Andros, as well as from his own writings. In fact, in an article published in *JIAN* in 1898 and 1899 under the title "Τίς ἡ νῆσος Συρίη τοῦ Ὁμήρου" ("Which was Homer's island of Syrie?") and subtitled "Εἰσαγωγὴ εἰς τὴν μελέτην τῶν νομισμάτων τῆς νήσου Κέω" ("Introduction to a study of the coinage of the island of Kea") he concluded as follows: "... which was written precisely as an introduction to a detailed account of the coinage of Kea, which we shall publish shortly in the present periodical". His first efforts appeared in his records, now in the Athens Numismatic Museum, where there are plates in which all the Kean numismatic types have been collected from different publications. The fruit of this work, which was never completed, was the plates of coins included by I. Psyllas in his History of Kea, in which Svoronos' views are depicted. At this point interest in the Kea mint stopped. Since then scholars have followed Svoronos' attributions in a general way and have diverged very little from them.

All the earlier scholars followed a fixed order in their classification of the coins, beginning with Karthaia, perhaps because it was the best known, followed by Ioulis and ending with Koresia. In this study the order is changed, Koresia coming first followed by Ioulis and Karthaia. This departure may appear at first sight difficult to justify and uncalled for, but in practice I think it is necessary in the case of this numismatic study. Research showed that of the three cities Archaic Koresia possessed the best organized mint, probably because of the currency requirements imposed by its strategic position on the trade routes. Its output, though less abundant than that of Ioulis, was characterized by complete and almost regular series, with and without a dolphin, in which a wide variety of fractions were employed, from staters to obols and hemiobols. The reverse incuses appear on all the types used on Kea by the three cities and span a broad, uninterrupted chronological gamut.

It therefore seemed more convenient to begin the classification of the mints with Koresia. Although its issues have survived in smaller numbers, they can serve as models on which to base comparisons with the Archaic issues of the other cities. In the case of the Ioulis mint, although somewhat problematic as regards the attributions of certain types, it provides examples of both types, with and without a dolphin. Lastly, Karthaia, apart from problems of attribution, also presents poorly preserved numismatic series.

I should also point out that in the compilation of the catalogue I have relied in the first place on the iconographical classification, distinguishing the issues according to whether or not they depicted a dolphin. It seemed to me that in this way the chronological interlocking of the types would be more apparent, while at the same time the lack of precise dating evidence would not affect the final classification of the series, which is based on internal criteria.

It may seem strange that the hub of this study should so largely turn on the Archaic coins, but our research showed, and it will become apparent in the following chapters, that this was the period that presented the most, as well as the most basic and interesting, questions.

There are two problems when studying the Kea mints: the silence of literary and epigraphic sources on matters of economy and fiscal policy, and the lack of organized excavations on the island that could provide criteria for a more objective and positive identification and chronology of the material. For this reason, in cases where the material itself did not allow of further elaboration, I restricted myself to a simple statement and intimation of the problems giving a general picture of the production and organization of the Kea mints based on their similarities with other workshops. As regards chronology, I confined myself to the internal congruity of the series, avoiding absolute dates where these were not supported by objective criteria.

CHAPTER 1

GEOGRAPHY AND HISTORY

Kea's geographical position, close to Attica and Euboea, was crucial for its maritime links and trade with the Aegean region. Its east and west coasts rendered the traffic of goods between the southern Cyclades and the Euripos easy,[1] and at the northern end the harbour of Ayios Nikolaos afforded a safe haven for ships voyaging from southern Greece to the Aegean.

On the island itself abundant springs compensated for the aridity that characterizes the Cyclades due to the sparse rainfall and made different types of cultivation possible.[2] Viticulture, the oak forests and the cultivation of mushrooms, figs and pears were of great importance for the rural economy.[3] Animal husbandry was practised, chiefly of sheep and goats,[4] and beekeeping, attested by the local myth of Aristaeus.[5] In an era when the economy was based on self-sufficiency in agricultural production, Kea was able to cover the subsistence needs of the inhabitants with its own products.

Another source of wealth on the island must have been the minerals. There is evidence for the presence of red ochre, a mineral with many uses, from medicine to colouring agents,[6] as well as iron and lead, attested by the mine galleries that have been found.[7] The island also possessed a kind of marble suitable for building, cipollino,[8] which met its constructional needs.

Its favourable geographical position and rich soil were the primary reasons that attracted inhabitants to the island.[9] Evidence of human occupation has been found belonging to the Early, Middle and Late Neolithic periods, particularly in the north of the island, where the settlement and cemetery of Kefala are located, as well as at the sites of Paura, Pervelo and Sykamnia.[10] This of course does not mean that habitation did not spread to other areas as well, for which there is

1. P.G. Calligas, "Euboea and the Cyclades", *Cycladica. Studies in memory of N.P. Goulandris. Proceedings of the 7th British Museum Classical Colloquium*, London 1983, 88-89.

2. For the stewards of the springs, *IG* XII, 5, 569, and A. Pridik, *De Cei insulae rebus*, Amsterdam 1892, 94-95. For the traditions about the nymphs and the presence of water on the island, K. Chr. Storck, *Die ältesten Sagen der Insel Keos*, Mainz 1912, 5-7.

3. Athenaeus, *Deipnosophistae*, 2.59d, 3.77e, 14.650d. Theophrastus, *On Plants*, 9. 17.

4. Aelianus, *De natura animalium*, 16. 32.

5. See p. 11.

6. Theophrastus, *De lapidibus*, viii. 51-54.

7. L. Mendoni, N. Beloyiannis, «Μεταλλευτικὲς καὶ μεταλλουργικὲς δραστηριότητες στὴν ἀρχαία Κέα» *Ἀρχαιογνωσία* 7 (1991-92) 1993, 91-103.

8. W. Hankey, "A marble quarry at Karystos", *BMB* 18, 1965, 53-59.

9. K. Chr. Storck, op.cit., 15-26, and G. Huxley, "Xenomedes of Keos", *GRBS* 6, 1965, 235-245.

10. J.E. Coleman, *Keos I, Kephala, a Late Neolithic Settlement and Cemetery*, Princeton 1977. H. Georgiou - N. Faraklas, "Ancient Habitation Patterns of Keos. Locations and Nature of Sites on Northern Part of the Island", *Ἀριάδνη* 1985, 207-208, cite all the relevant bibliography.

as yet no evidence. From the Early Bronze Age onwards habitation remains become even more frequent, culminating in the establishment of the settlement of Ayia Eirene, which literally flourished until the 15th c. BC and continued to be a pole of attraction into the Hellenistic period.[11] The prehistoric settlement preserved its sacred character and the cult continued without a break, in spite of the natural disasters that plagued the region and destroyed a large part of it.

In the historical period four cities arose[12], one in each of the hydrogeological basins formed by the low mountain masses that divided the island into four. Koresia on the northwest coast was in a way the continuation of the settlement of Ayia Eirene. In historical times life in the city, which spread over two terraces northwest of the present settlement, lasted from the Archaic to the Hellenistic period[13]. Two building phases can be distinguished in its fortification wall, the first of which was more circumscribed and also shows the size of the settlement. Nevertheless, its period of greatest prosperity seems to have been in the Archaic period, to which a small temple is dated whose remains have been found on the easternmost terrace of the acropolis. From the side of this terrace also came the Archaic kouros in the Athens Museum (EM 3686),[14] which was probably found in the area of the Archaic cemetery.

Ioulis, in the interior of the island, formed its centre in every chronological period, with the result that the continuous habitation has destroyed a large part of the ancient city. Remains of the Archaic site, however, survive everywhere. The line of its walls can be followed with considerable accuracy, and cuttings in the rocks, embankments and retaining walls, scattered architectural members and tombs reveal the extent of the ancient city. An important monument is the huge lion to the east of the city, belonging to the Archaic period and hewn out of the native rock, which is associated with the traditions of the island.[15]

In the area of ancient Poiessa on the southwest coast, modern habitation has obliterated almost all traces of the ancient site. The acropolis of the city was situated on a low hill to the south of the valley of the same name, above the sea. The habitations had spread beyond the walls, the line of which can be reconstructed with relative accuracy on the flanks of the hill and in the valley. Its cemetery must have extended north of the same valley; most of the funerary inscriptions and pottery of excellent quality came from here.[16]

11. J.L. Caskey, *Hesperia* 31, 1962, 263-283; 33, 1964, 314-335; 35, 1966, 363-376; 40, 1971, 358-396; 41, 1972, 357-401; 50, 1981, 320-326. Idem, "Ayia Irini, Keos. The Successive Periods of Occupation", *AJA* 83, 1979, 412.

12. Callimachus, *Aetia* 70, «τέσσαρας ὥς τε πόληας ὁ μὲν τείχισσε Μεγακλῆς Κάρθαιαν, Χρυσοῦς δ' Εὔπυλος ἡμιθέης εὔκρηνον πτολίεθρον Ἰουλίδος, αὐτὰρ Ἀκαῖος Ποιῆσσαν Χαρίτων ἵδρυμ' εὐπλοκάμων, ἄστυρον Ἄφραστος δὲ Κορήσιον.»

13. *Landscape Archaeology*, 265-268.

14. For the Kea kouros, Φ. Σταυρόπουλος, «Ὁ Κοῦρος τῆς Κέας» 1937, 687-693, and G.M. Richter, *Kouroi. A Study of the development of the Greek Kouros from the late 7th century BC.* New York 31970, 122, n. 144, pls. 419-422.

15. X. Landerer, «Ἀρχαιότητες τῆς νήσου Κέας», *AE* 1843, 629. L. Savignoni, «Ἀρχαιότητες τῆς Κέω», *AE* 1898, 220-221. P. Graindor, "Inscriptions de Céos", *MB* 15, 1911, 62; Chr. Dunant, J. Thomopoulos, "Inscriptions de Céos", *BCH* 78, 1954, 322-327. F.G. Maier, "Stadtmauern auf Keos" *AM* 73, 1958, 6-8.

16. P. Graindor, "Inscriptions de Céos", *MB* 7, 1903, 291; 15, 1911, 62. G. Maier, op. cit. *AM* 73, 1958, 11-13. G. Galani, L. Mendoni, Ch. Papageorgiadou, «Ἐπιφανειακὴ ἔρευνα τῆς Κέας», *Ἀρχαιογνωσία* 3, 1982 (1987), 237-250.

The inaccessible situation of Karthaia in the southeast part of the island and the absence of modern building have contributed to the preservation of a large part of the ancient city, and investigating it has therefore been more fruitful.[17] At Karthaia, too, the acropolis, as the city centre, was organized within a limited area, while the site itself spread to the surrounding district. On the acropolis remains of many buildings and monuments as well as considerable sections of the walls are preserved.

As well as the cities, which formed the main habitation centres, smaller sites were scattered all over the island, producing a picture of a thickly populated place. It seems that, close to the major centres which controlled the island politically and financially, smaller settlements grew up whose nature it is difficult to investigate because of the lack of excavation data. They appear, however, to have been secondary centres where agricultural products were collected. Smaller units, of an agricultural and stock-raising nature, which were productively self-supporting, completed the habitation and economic system on the island. The same form of organization continued on Kea until its final years and was largely due to the nature of terrain, which dictated the utilization of the land, and to the geological and hydrological divisions, which precluded the existence of large integrated tracts.[18]

Of the four cities, some shrank in size and others declined, and by the 2nd c. BC there are references to only three,[19] and a little later on to only two, Ioulis and Karthaia, which had, respectively, absorbed Koresia and Poiessa.[20] The silence of historical sources does not necessarily imply the total abandonment of the cities, because we have the example of Poiessa, where remains have been found continuing into the Byzantine period. Life in these cities obviously carried on, although they were no longer autonomous political centres, but small impoverished settlements dependent on the remaining larger centres.

Kea's history is not remarkable for outstanding events. Fate had not destined it for a major role in the historical process; it simply followed the course of its powerful neighbours and the great powers of the Aegean. Nevertheless, whatever relations it had with its neighbours or allies are apparent in the minting activities of the cities. It should be repeated that in spite of the island's small size and inferior economic strength, all the cities except for Poiessa minted their own coins.

The beginning of their coinage was connected with the general spread of coinage throughout the Aegean area, as well as with each city's local minting activities. The geographical situation of the cities and the particular circumstances of each of them were the factors that led to the adoption of a coinage. In this early period the influence of Aigina was of decisive importance, as is evident from the shape of the coins, their weight and their technique. Aigina's economic

17. *Voyages*, 13-24. X. Landerer, op. cit. *AE* 1843, 627-629. P. Graindor, "Fouilles de Karthaia", *BCH* 29, 1905, 329-361; 30, 1906, 433-452. Idem, *MB* 15, 1911, 62; 25, 1921, 79-108. G. Maier, op. cit. *AM* 73, 1958, 13-15, M. Schuller, "Dorische Architektur der Kykladen" *JdI* 100, 1985, 367-382. L. G. Mendoni, «Ἀρχαιολογικὲς ἔρευνες στὴν Κέα: Ἀρχαία Καρθαία», *Ἀρχαιογνωσία* 1985 (1989), 149-184.

18. Ch. Papageorgiadou, "Céos hellénistique: Organisation de l'espace rural", Akten des XIII Internationalen Kongresses für Klassische Archäologie, Berlin 1988, 547. Eadem, "Ἡ ὀργάνωση τοῦ ἀγροτικοῦ χώρου στὴν Ποιήεσσα τῆς Κέας κατὰ τὴν ἑλληνιστικὴ περίοδο", in *Ποικίλα* (*ΜΕΛΕΤΗΜΑΤΑ* 10) Athens 1990, 309-320.

19. Ptolemaeus, *Geographia*, III, 15.27.

20. Strabo, *Geographica*, X, 5.6.

range is apparent when one thinks that the coins of the neighbouring islands were used to supplement Aigina's own issues and covered part of its commercial needs.[21]

The Archaic period was one of especial prosperity for the cities of Kea. Karthaia began its building programme, the finds from Koresia indicate great activity there, and Ioulis was embellished with its gigantic lion, evidently part of a wider building programme. This time of peace and prosperity was not interrupted by the Persian invasion, because the islands submitted immediately. When the tide turned, however, the Keans took an active part with the dispatch of two triremes and five pentekontors to the naval battle of Cape Artemisium, and they gave their support in all the other battles of the Greeks.[22] The contribution of a significant number of ships is evidence of the island's financial soundness at this time, to which the cities' flourishing mints are further testimony.

The Persian Wars brought about a broad change in the balance of power, with the ascendancy of the Athenians. Kea, among the neighbouring regions, was not only influenced by Athens, but early on became a member of the First Athenian League. The cities that took part in it retained their autonomy and were obliged to contribute a certain sum to the League treasury. In the original arrangement Kea's contribution was set at four talents,[23] but it is not certain whether this was Kea's only obligation, or whether it also had to provide harbour facilities, crews, victuals or other necessities. Since the whole organization was chiefly aimed at the creation of a mobile fleet ready for war, the allies had other obligations in addition to the payment of a contribution, and most probably Kea because of its location was also used as a naval base.[24] Comparing this sum of four talents with the known contributions of the other islands, we see that it was equal to about 1/3 of the payment of Andros, 1/2 of Naxos, 1/4 of Paros and twice that of Seriphos. These figures are an indication of Kea's economic strength in relation to that of the other islands of the Aegean and the Cyclades, although its contribution seems to have been rather high if we compare Naxos' economic power at this time. In 433/2 BC Kea's contribution was reduced to three talents,[25] which was the same as that of Cythnos, Tenos and Thera, and it seems to have reflected Kea's real position. Between 425 and 417, the date is not absolutely sure, the Athenians reorganized the whole tax system of the alliance and introduced a considerable increase in the contributions.[26] Under the new assessment the Keans' contribution was increased to ten talents, namely 150% of their original payment and 180% of their reduced payment from the years 433/2

21. *ACGC*, 45 .

22. Herodotus, *Historiae* VIII, 1.2; 46.2 Pausanias V, 23. 2.

23. R. Meiggs, *The Athenian Empire*, Oxford 1972, 119 and pl. list V.

24. From 413 BC the contribution was replaced by the imposition of harbour dues, in the view of Th. R. Martin, *Sovereignty and Coinage in Classical Greece*, Princeton 1985, 196-207. Also, R. Unz, "The Surplus of the Athenian Phoros", *GRBS* 26, 1985, 1, 31, 34-36. See also O. Picard, "Monnaies et gravure monétaire à Thasos à la fin du Ve siècle" in *ΦΙΛΙΑ ΕΠΗ εἰς Γ. Μυλωνᾶν*, Β΄, Ἀθήνα 1987, 162.

25. R. Meiggs, op. cit., 563.

26. R. Meiggs, D. Lewis, *A Selection of Greek Historical Inscriptions to the End of the 5th c. BC*, Oxford 1971, 188-201; M.N. Tod, *Greek Historical Inscriptions from the 6th Century to the Death of Alexander in 323 B.C.*, Chicago 1985, 148-163. For a dating of the reassessment in 425, see recently, L. Kallet-Marx, *Expense and Naval Power in Thucydides' History 1-5.24*, Berkeley, Los Angeles, Oxford 1993, 37-69.

to 430 BC. The new tax was equal to that of the Tenos, double that of Thera and 1/3 that of Paros. The proportion of the taxation shared between the allies does not seem to have seriously upset, although again Kea's new contribution seems to have been increased the most, to judge from Thera and Paros.

The end of the Archaic coinage of the cities occurred after 480 BC, but cannot be pinpointed more precisely. The truth is that the minting activities of the Aegean islands started to decrease perceptibly after the naval battle of Mycale in 479, although it did not finally come to an end until quite a few years later. The cause of this break is usually attributed to the prohibitory Athenian decree of the 5th century,[27] which was the capping stone of her financial policy within the framework of the League.[28] This not only prohibited the minting of silver coins by the city-state members of the League, but compelled the exclusive use of Athenian coins, weights and measures. In actual fact, the financial circumstances of the cities at this time were such that striking coins was out of the question for most of them.[29] First the Persian Wars and then the formation of the First Athenian League prevented the cities from developing their economies, and this was one of the reasons why the later issues of the cities consisted of small fractions and the heavier coins, the staters were missing. There thus seems to have been no good reasons for the Athenians to introduce such an unpopular measure. We may perhaps suspect that the 5th century decree was really aimed at preventing the economic expansion of Aigina into areas that were already under Athenian domination, in order to weaken her, while at the same time it was a way of displaying Athenian power. Furthermore, the uniformity in the coinage that had been achieved worked in favour of the unhampered spread of Athenian commerce.[30] Regardless of the reasons behind the Athenian measure, however, or its success or failure, the localised minting of small fractions seems to have continued, and only the large denominations were replaced by Athenian coins.[31] In any case the minting activities of the cities, which had been interrupted for one reason or another, were resumed in the 4th century with the striking once more of silver coins, even though the economic situation was not favourable for many of them.

27. The date of this decree remains still controversial. D.M. Lewis, "The Athenian Coinage Decree" and H.B. Mattingly, "The Athenian Coinage Decree and the assertion of the Empire", in I. Carradice, ed., *Coinage and Administration in the Athenian and Persian Empire*, The 9th Oxford Symposium on Coinage and Monetary History, BAR 343, 1987, 53-63 and 65-71.

28. E.S.G. Robinson, "The Athenian Coinage Decree and the Coinages of the Allies", *Hesperia Suppl.* 8, 1949, 324-340.

29. R. Bogaert, *Banques et Banquiers*, Leiden 1968, 126-203, and for Kea in particular, 197. Also, E.S.G. Robinson, loc. cit. 328-329. See also, Th. Figueira, *Aigina. Society and Politics*, New York 1981, 113, 123, 166, where, after 480, only smaller fractions were struck, while the staters were already replaced by the athenian coinage.

30. J.A. Kagan, "The Decadrachm Hoard: Chronology and Consequences", *BAR* 343, 1987, 21-28.

31. Gardner, "Coinage of the Athenian Empire", *JHS* 33, 1913, 157-159.

On Kea this period, although rich in historical events, the Spartan domination,[32] Kea's accession to, defection from and subsequent return to the Second Athenian League,[33] and Theban expansionism,[34] remains obscure in terms of its coinage. The two small silver series of Ioulis and Karthaia diverged appreciably from the known numismatic organization of the cities. They may have been commemorative in character and connected with Kea's defection from the Athenian League, under the leadership of Ioulis, which had probably formed an alliance with Karthaia; this appears probable from their use of common iconographical types, although there is no historical evidence for it.

In the course of the 2nd Athenian League the Athenians avoided many of the mistakes that had angered its members during the 1st League and led to its dissolution. Nevertheless they lost no opportunity to intervene in the economic affairs of the weaker allies, at least, to their own advantage. Their monopolistic exploitation of the Kean red ochre should be seen in this context.[35] Red ochre was one of the island's profit-making export. Its monopolistic exploitation by the Athenians, obviously on terms favourable to themselves, deprived Kea of one of its tradeable product and thus contributed to its financial decline. Whether or not this can be interpreted as an act of punishment for the Keans' defection, it is still a good indication of the financial policy of the Athenians towards their allies. At his time the circumstances for the smaller and weaker cities were such that it was impossible for them to trade their products by their own means and they were therefore obliged to turn to the large commercial centres, chiefly Athens, often on terms that were far from favourable. One of the means of trade of this "protective" economy was that it also possessed the strongest currency. In this way the Athenians had no need to resort to any binding law. The trade of a wider region, which had passed into their hands, was transacted using the Athenian coinage, whose quality and strength covered every other monetary operation. In the case of Kea, the revenues from the red ochre trade evidently covered the greater part of its currency business. The passing of this trade exclusively into the hands of the Athenians also meant Kea's complete acceptance of the Athenian currency, with the consequent decline of local minting into an operation deprived of any real economic value.

The dissolution of the 2nd Athenian League and the rise of the power of Macedon does not appear to have significantly altered the equilibrium of the Aegean. The Macedonians never regarded the sea as a domain where they could embark on important enterprises,[36] and the Athenian fleet remained the most important force in the Aegean.[37]

32. D.M. Lewis, "The Federal Constitution of Keos", *BSA* 57, 1962, 3, n. 28; H.W. Parke, "The Development of the Second Spartan Empire", *JHS* 50, 1930, 61-62.

33. J. Cargill, *The Second Athenian League. Empire or Free Alliance?* Berkeley, Los Angeles, London 1981.

34. J. Buckler, *The Theban Hegemony, 371-362 B.C.*, Cambridge, Massachusetts, London 1980, 173.

35. *IG* II.2, 1128. *Landscape Archaeology*, 299-303.

36. E.M. Burke, "Lycurgan Finances", *GRBS* 26, 1985, 257; H. Hauben, "Philippe II, fondateur de la marine macédonienne", *AncSoc* 6, 1975, 51; 7, 1976, 79.

37. Between 350 and 340 Athenians and Macedonians employed piratical forces for the control of the seas. With the imposition of order by the Macedonians the pirate raids ceased, thus creating favourable conditions for trade and shipping. Sea communications were untroubled except for raids by Persian pirates, the purpose of which was to obstruct Alexander. The first to follow the same tactics was Memnon the Rhodian in 333 and 331 BC; see A.B. Bosworth, "The Mission of Amphoterus and the Outbreak of Agis' War", *Phoenix Toronto* 29, 1975, 33.

In the 3rd c. BC, however, along with the dissensions of the Diadochoi, a new threat of domination in the vital region of the Aegean appeared,[38] calling for the permanent presence of a fleet in the area, for which the islanders themselves contributed money.[39] That the levies were especially burdensome and the cities were obliged to raise loans to meet them is clear from inscriptions found on Kea.[40] The League of Islanders, to which Kea also probably belonged, was the instrument through which the princes exercised supremacy in the Aegean. Since evidence for a common numismatic policy among the Islanders is lacking, it would seem that each member was free to follow its own. The chief currency unit, with which large business deals were transacted, was the silver coin of the Diadochoi. The cities preserved the right of minting, but most of them only struck bronze coins of little real value for their everyday needs.

From the 3rd c. BC on, the most prolific period of minting on Kea began. Each of the cities developed its own currency policy in accordance with its needs and capabilities. The minting operations of Koresia, which was made into a naval base for the Ptolemaic fleet[41] and served as a port for Ioulis, were short-lived and soon came to an end. Most of the Ptolemaic coins found on the island come from the Koresia district. Ioulis' production would not have been very important were not it for the excellent organization of its mint. Karthaia, on the other hand, the high estimated religious centre, achieved the peak of its production and organization of its mint with a succession of complete series.

At this time, also, the reformed Aetolian Confederacy, profiting by the dissension between the Diadochoi, succeeded in extending its influence in Greece and strengthening it in the Aegean through the activities of its pirate fleet.[42] To this period, between 240 and 220 BC, belong the pacts between Kea and Naupactus and the Aetolians,[43] which largely gave Kea protection from Aetolian pirate attacks. However, the invoking of a common mythical descent from the Naupactan hero Keos would not appear sufficient cause in itself for granting such privileges. It is more probable that Kea offered the Aetolians, if not ships, at least crews and harbour facilities. Dubois' opinion can also not be ruled out, that Kea, which at this time was directly dependent on the

38. For this period, see in general K. Burazelis, *Das hellenistische Makedonien und die Ägäis*, München 1982, with all the relevant bibliography. W.W. Tarn, *Antigonos Gonatas*, Oxford 1969, 72-88. More recently, G. Reger, "The Political History of the Kyklades: 260-200 BC", *Historia* 43, 1994, 32-69.

39. Diogenes Laertius, II. 140; *SIG* 3, 348.

40. P. Graindor, *MB* 11, 1907, 98; I.L. Merker, "The Ptolemaic Officials and the League of the Islanders", *Historia* 19, 1970, 147. For the situation in the Cyclades in this and the Roman period, see P.M. Nigdelis, *Πολίτευμα καὶ κοινωνία τῶν Κυκλάδων κατὰ τὴν ελληνιστικὴ καὶ αὐτοκρατορικὴ ἐποχή*, Θεσσαλονίκη 1990.

41. J.F. Cherry, J.L. Davis, "The Ptolemaic Base at Koressos on Keos", *BSA* 86, 1991, 9-28.

42. M. Holleaux, *Rome, la Macédoine et l'Orient Grec. Études d'Épigraphie et d'Histoire Grecques, IV, I*, Paris 1952, 124-145.

43. *SIG* 2350-2352.

Aetolian Confederacy, had also agreed to the stationing there of an Aetolian general.[44] What is sure is that its strategic position on the sea routes directly served the naval power of the Aetolians and the pacts between the two regions constituted in reality a covert form of suzerainty, which ceased with the return of the Macedonians.

The decline of the Hellenistic kingdoms in the 2nd c. BC gave Rhodes the opportunity to extend its sphere of influence, using as its tool a new League of Islanders,[45] and the proclamation of the emancipation of the Greek cities by the Romans in 196 also signalled the beginning of their absorption into the Roman state.[46] The historical sources touching on Kea are silent about this period, probably because its role in the disputes between the powerful forces that had arisen was insignificant. We are therefore not in a position to know precisely the situation and regime prevailing on the island. We do know, however, that in the 2nd c. a very important shift in numismatic production appeared. The cities stopped minting their own coins, which gave way to series from a common mint operating in the name of all the Keans. Paradoxically, the coin types are purely local, without any reference to Rhodian models, as was usually the case.[47] It seems that the Kean's national pride in their League was such that they did not tolerate foreign influences, and since their series were destined only for local circulation they had no need to resort to stronger currencies in order to get into the foreign markets.

The next century in the Aegean was marked by the final decline of the Hellenistic hegemonies, the upheavals provoked by the Mithridatic Wars and the growth of piracy and the slave trade, while the Roman state, immersed in its own internal problems, was unable to impose any order.[48] Nevertheless, on Kea a considerable expansion was apparent at Ioulis, probably related to the presence of Marcus Antonius on Greek soil.[49] This idea is supported by the existence of a series depicting Dionysus, which follows a type known from Athens, where he was connected with the cult of Marcus Antonius as the "new Dionysus".[50]

For the situation of Kea in the Imperial period there is almost no evidence, except for the few inscriptions mentioning the honours paid to certain emperors. Politically the majority of the Aegean islands were subject to Rome as *civitates stipendiariae*, enjoying a relative autonomy,

44. M. Dubois, *Les Ligues Étoliennes et Achéennes*, Paris 1884, p. 33. For the aetolian politics towards their allies, see D. Golan, "The Case of Pellene, Summer 141 BC", *Πελοποννησιακά* 8, 1981-1982, 49-63 and especially 52.

45. M. Fraser, G.E. Bean, *The Rhodian Peraea and the Islands*, Oxford 1954, 154-172. R.M. Berthold, *Rhodes in the Hellenistic Age*, Cornell 1984. See also, D. Sippel, *Rhodes and the Nesiotic League*, Cincinnati PhD 1966 and idem, "The Meeting Place of the Rhodian Nesiotic League", and "Tenos and the Nesiotic League", *Anc World* 1986, 1-2, 35-40, and 41-46. G. Reger, op. cit. *Historia* 43, 1994, 32-69.

46. M.V. Braginton, "Exile under the Roman Emperors", *ClJ* 39, 1943-1944, 391-407. A. Donati, "I Romani nell'Egeo. I documenti dell'Età Republicana", *Epigraphica* 27, 1965, 9-10, and 20. S. Accame, *Il dominio Romano in Grecia dalla guerra acaica ad Augusto*, Roma 1972, 241. For the period 314-167 BC see also G. Reger, *Regionalism and Change in the Economy of Independent Delos*, Berkeley, Los Angeles, Oxford 1994.

47. See for instance the coins of Kythnos.

48. F. Millar, "The Mediterranean and the Roman Revolution. Politics, War and Economy", *Past and Present*, 102, 1984, 3, 12, n. 39.

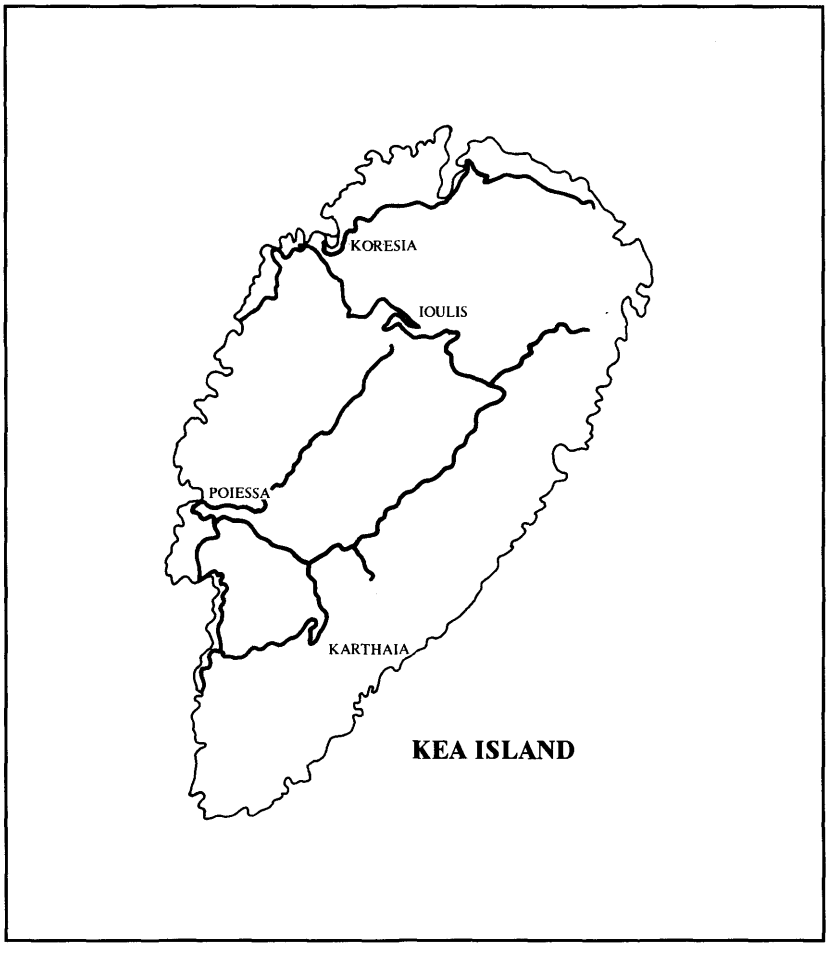
49. Plutarchus, *Antonius*, 23.

50. Kroll, *Agora*, 233.

but also having financial obligations to the Roman state. Although there is no actual testimony, Kea must have been in this category. However, independently of the circumstances of the island's subordination, its financial situation was not changed. The Roman state never actively engaged in commerce, which remained in the hands of private individuals. Kea probably continued to be a stopover on the Aegean sea routes and to provide the harbour facilities it had provided in the past as a transit trade centre. In the 1st c. BC the sole surviving coin depicting Augustus was struck.[51] Leaving aside the problems and questions posed by the uniqueness of this coin, its minting fits into the emperor's wider policy of weakening Athens by detaching various neighbouring regions from its control, such as Eretria and Aigina. Kea should also probably be included, in which case the official centres of imperial propaganda, like the Keans themselves, would have made sure to mark the event by this issue.

Henceforth the financial and numismatic changes that had already begun to make themselves felt during the Hellenistic period, began to escalate more and more, to culminate in the concentration of all the functions in the large administrative centres. In the course of these realignments Kea disappeared from the scene.

51. J.H. Christiansen, "A Unique Bronze Coin of Augustus from the Island of Keos in the Cyclades", *NC* April 1976, 76.


KORESIA
IOULIS
POIESSA
KARTHAIA
KEA ISLAND

CHAPTER 2

NUMISMATIC TYPES

Most of the pictorial types of the Kea coins are connected with local myths and traditions and the cults of indigenous heroes.

The principal figure in the Kea pantheon was the hero-god Aristaeus.[1] The traditions about him offer few variations, and the basic differences in the myths that were built up around him are limited to events relating to his mature years. He was thought to be the son of the nymph Cyrene and Apollo. His upbringing was entrusted to the Nymphs, by whom he was given the names Aristaeus, Agreus and Nomius, and who taught him olive cultivation, beekeeping and cheese-making. Later he was apprenticed to the centaur Chiron, and the Muses taught him medicine and soothsaying. He married Autonöe, Kadmus' daughter, by whom he fathered Actaeon and Macris, who subsequently became Dionysus' wet-nurse.

His great achievements and his actual entry into mythology came about with the tragic death of his son Actaeon, which marked an important staging point in his life. To console him, Apollo sent him to Kea.[2] It was a time of terrible heat and drought all over Greece, and especially in the Cyclades. The cause of it was the vindictive wrath of Icarius' dog, Maea, metamorphosed into the star Sirius, over the death of its master, whose murderers had hidden themselves among the islanders. Aristaeus offered expiatory sacrifices to Icmion Zeus, on the highest mountain of Kea, and at the same time he uncovered and punished the guilty murderers. Sirius' anger was appeased, and Zeus, grateful for the sacrifices, commanded the cool Etesian Winds thenceforth to bring relief to Greece and particularly the Cyclades for forty days from the rising of the Dog-star. Since that time the Keans, in gratitude to their benefactor, instituted the cult of Aristaeus and performed special rites at the rising of Sirius.

Aristaeus left Keos for Arcadia and later went to Tempe, where he settled. But there the bees began to die and in a short time all his hives were destroyed. He learnt from Proteus that the reason was the vengeance of the Dryads for the death of their comrade Euridice, which had been caused by Aristaeus. His mother, Cyrene, advised him to offer sacrifices to the Dryads and the dead Orpheus in order to appease them. Aristaeus slaughtered four young bulls and four heifers, using a club so as not to make a wound and not to spill any blood. He then left them in a well enclosed place, or in the forest, according to some authors, for nine days. When he returned, he found new swarms of bees emerging from the carcasses of the animals and clustering in the branches of a nearby tree. This tradition, the original of which was the ancient myth by Philetas of Cos, was a favourite with later writers like Virgil and Florentinus.[3]

1. For the literary evidence about Aristaeus, W.H. Roscher I, 1 (1884-1886), cols. 547-551, s. v. Aristaios; *RE* II, 1 (1895), cols. 852-859, s.v. Aristaios. On the theological interpretation, see R. Triomphe, *Le lion, la vierge et le miel*, Paris n.d. For the events of his life Apollonius Rhodius, *Argonautica* II, 500-520, Diodorus Siculus, IV. 80.5-82.6, Hesiodus, *Theogonia* V. 975, and Nonnus, *Dionysiaca*, V.212-280.

2. W. Burkert, *Homo mecans. The Anthropology of Ancient Greek Sacrificial Ritual and Myth*, Berkeley, Los Angeles, London 1987, 109-116.

3. For all the relevant literary sources, see, A.B. Cook, "The Bee in Greek Mythology", *JHS* 15, 1895, 1-24.

Aristaeus' travels were not confined to Greece. He went to Sardinia and Sicily, where he taught olive cultivation, and was worshipped as a god. He followed Dionysus on his expedition to India[4] and was also initiated by the god into his Mysteries in Thrace, where he spent the last years of his life. After dwelling sometime in the region of Haemus, he then disappeared. However, his cult continued for many years among the Thracians and Greeks.

God of agriculture, protector of farming, productivity and flocks, Aristaeus has more the characteristics of a beneficent daimon of nature.[5] The same name was also in fact an epithet applied to other gods. He was above all a deity who conducted man onto a higher plane than mere survival and taught him how to intervene in the natural processes in order to serve his own daily living needs. It is also significant that the products whose cultivation and production Aristaeus introduced were among the most basic products not only of Kea but of the whole of Greece and the Mediterranean. His knowledge of agriculture was carried through his distant travels to Lybia, Sicily and Sardinia.

It nevertheless seems curious that there is no evidence from Kea itself for any cult of Aristaeus, even though the literature is full of episodes in his life connected with the island. Most probably his assimilation by the major deities of Olympus, which had begun in the 6th c. BC, when representations of him were already becoming scarcer,[6] also resulted in a fusion of his cult with that of the other gods. The anecdotal account of his life handed down by later writers was not sufficient to establish a corresponding cult as well.

In the iconography of the Kean coins every male bearded figure shown without other features or attributes is considered to be Aristaeus. The more general iconography of the god is not particularly helpful, since very few depictions of him exist, and still fewer on coins; moreover, even in these instances the identification as Aristaeus remains doubtful and debatable.

The youthful horned figure on 4th c. BC coins of Cyrene has been identified with Aristaeus.[7] Although the possibility that this figure represents Carneian Apollo is very probable, Duchalais sees in it a local deity who combines the features and nature of Battus, Aristaeus and Zeus, and in which finally the figure of Aristaeus prevails.[8]

The seated male figure on 5th c. BC coins from Rhegium has also been interpreted as Aristaeus. B.V. Head[9] was the first to identify this figure with some deity of nature, Agreus or Aristaeus, basing his view on the fact that a dog, a duck and a crow are also depicted. His view was shared

4. Nonnus, *Dionysiaca* XIII, 253-308.

5. S. Papaspyridi-Karousou, "Un 'Πρῶτος Εὑρέτης' dans quelques monuments archaïques", *ASAtene* 24-25, 1950, 37-46. L. Marangou, "Aristaios", *AM* 87, 1972, 77-83.

6. *LIMC*, 603-607.

7. *HN*, 864.

8. A. Duchalais, "Monnaies de Cyrène au type de l'abeille", *RN* 1850, 265-269. L. Müller, *Numismatique de l'ancienne Afrique, I, Les monnaies de la Cyrénaïque*, Copenhagen 1860, 99-112.

9. *HN*, 94.

by E.J. Seltman,[10] who saw in the figure an agrarian deity having the attributes of Dionysus (a panther and a bunch of grapes on the field of the coins) and Apollo (a crow and a raven).

Only on the coins of Corcyra in the early Imperial period, with the inscription ΑΓΡΕΥΣ,[11] does the identification with Aristaeus appear to be more secure. It was probably the cult statue of the god, which depicted him standing, bearded, in a long chiton and himation, and holding a horn in his right hand. Furthermore, the shepherd's staff depicted on 2nd c. BC coins from Apollonia, a Corcyrean colony, is also evidently a reference to Aristaeus.[12] None of these identifications is quite sure, however, and it is therefore not possible to define a specific iconographical basis for the representation of Aristaeus. The instance of Corcyra does not allow of close connections and comparisons with Kea because of the great difference in the political substructures of the two regions and their distance apart, and because of the different chronology and styles of the depictions. Thus the figures on the coinage of Kea remain without identification, and any attempt to find one must base itself on an abstract approach rather than an identification based on concrete criteria. In addition, the combinations of the figures with the symbols on the reverses are of very little help, because the relation between them appears rather loose and very often alternating.

On the Kean coins the figures that are identified with Aristaeus have two main variations, due rather to the aesthetic conventions of the different periods than to any real iconographical differentiation. Aristaeus is shown either as a mature bearded man with a band or a radiate diadem on his head like a sun god, or with the characteristics found in agrarian deities: rumpled hair and somewhat distorted, savage features.[13]

Aristaeus was also associated with Zeus, Apollo and Dionysus. His connection with Zeus, the god to whom he offered sacrifices in order to appease Sirius, is by virtue of his role as a god of atmospheric phenomena. A further form of relationship between the two gods is revealed in the Scholiast of Apollonius (527β): "Zeus was called Aristaeus...".[14] This was evidently Zeus Aristus, the supreme god. The word ἀριστεύς, however, is also known from inscriptions in cities of Asia Minor, like one from Cibyra referring to the people who engaged in organizing festive dinners. It also appears in later literary texts, like that by Dion Chrysostomos mentioning benefactors of the city who attended to the feeding of the population.[15] This would have been Zeus the provider of food, and possibly this side of the supreme deity was applied by extension to Aristaeus, the feeder par excellence of the rural population, whose gifts of oil and honey were basic products in the diet of ancient populations. On the other hand representations of Zeus himself are rare in the local numismatic iconography, a fact that is connected with the absence of any large cult centre of the god on the island.

10. E.J. Seltman, "The Type Known as 'The Demos' on Coins of Rhegium", *NC* 1897, 173-189.
11. *LIMC*, 607.
12. P. Gardner, "Floral Patterns on Archaic Greek Coins", *NC* 1881, 1-7.
13. E.J. Seltman, op. cit., *NC* 1897, 173-189.
14. For Zeus Aristaeus see U. von Wilamowitz-Moellendorf, *Der Glaube der Hellenen*, Band I, Darmstadt, 242.
15. L. Robert, "Τροφεύς et Ἀριστεύς", *Hellenica*, XI-XII, 1960, 574-576.

The connection of the hero with Apollo was especially close and real. Apollo, the pre-eminent god of the Cyclades, was the god of the sun, the source of life. It was his son who combated his destructive side, which brought the oppressive heat and the drought. He was, in short, the complement of his father; they represented the two aspects of the sun. They are, however, identified under yet another hypostasis: the Nymphs also called him by the name of Nomios,[16] as they did Apollo himself, as god of the fields and flocks. But Apollo too, whose cult is attested with certainty at least at Karthaia, Ioulis and Poiessa, is also depicted on the coins as a youthful figure with a laurel wreath in many variants.

The connection between Aristaeus and Dionysus is equally important. According to some traditions, Aristaeus visited Dionysus in Thrace and was initiated into his Mysteries, and later as head of the Arcadian warriors he followed Dionysus on his expedition to India.[17] His daughter, Makris, was the infant god's nurse, and another daughter, Nysa, cared for Dionysus, the son of Ammon and Amaltheia, in a sacred cave. The most significant indication in regard to the two gods, however, was the episode of their dispute over the merits of honey and wine, which was decided by the gods of Olympus in favour of Dionysus.[18] Aristaeus had taught men the use of an intoxicating drink made from honey, already known to pre-Homeric societies.[19] According to Pliny's description much later, it was a mixture of two thirds water and one third honey which was left exposed to the sun for forty days from the rising of Sirius. The dispute between the two gods reflected the abandonment of the old technique and the introduction of viticulture and wine production brought with him by Dionysus. Evidently this replacement also presupposed the abdication of the old god and his replacement by the new one, in which case it may be supposed that Aristaeus not only belonged to an earlier substratum of the Dionysus cult, but that he was a god of a similar nature.

The earliest evidence on Kea for the cult of such a god comes from Ayia Eirene, where it appears from the finds in the prehistoric temple that drinking vessels played an important role in the cult ritual. Furthermore, the worship of Dionysus, which continued until the 4th c. BC, started in the Protogeometric period in the same place.[20] Dionysus, whose cult was very widespread, is also easily recognizable on the Kean coins because of his special attributes: as a young ivy-crowned god, or Bacchus Indicus. The most important of his cult centres was at Ioulis, from which many inscriptions have come attesting festivals and sacrifices in his honour that go back

16. D.N. Levin, "Two Epithets of Aristaeus", *Hermes* 97, 1969, 498-501. L.R. Farnell, *The Cults of the Greek States*, Vol. IV, Chicago^2 1971, 123-124.

17. Nonnus, *Dionysiaca* XVII, 320-380. He was also the first man who offered sacrifices to Dionysus as a god, see Diodorus Siculus III.72.1.

18. Nonnus, *Dionysiaca* XIX, 225-262.

19. C. Kerényi, *Dionysos, Archetypal Image of the Indestructible Life*, Princeton 1976, 34, 37, 50.

20. M.E. Caskey, "Dionysos in the Temple of Ayia Irini", *AJA* 84, 1980, 200. Eadem, *Keos II. The Temple at Ayia Irini. Part I, The Statues*, Princeton 1986, 39-41.

to 6th and 5th c. BC rites.[21] Dionysia and tragic contests at Karthaia are also mentioned,[22] but so far there is no indication of the existence of an important Dionysiac cult centre in this area.

Most of the other numismatic types are also connected with the myth of Aristaeus and refer to two of the most basic episodes in the later tradition about the god.

The first is the deliverance of Kea and the rest of Greece from the catastrophic heat and drought inflicted by Sirius[23] by bringing about the cool summer breezes, the Etesian Winds.[24] At the same time Aristaeus taught men how to foretell the weather conditions for the following year by observing certain phenomena at the rising of Sirius, and in this way to increase agricultural production.[25] In mythology Sirius was the stellified dog of Orion or Icarus that had been set in the constellation of Canis Major. His importance in the life of mankind was considerable, since he had been regarded as destructive from as far back as Homer's day, but he also played a decisive part in the changes of season and in predictions of weather changes and future catastrophes. In Egypt, his rising, which coincided with the seasonal flooding of the Nile, also marked the beginning of the Egyptian calendar. In Greece it marked the beginning of the dog days and the scorching heat. The phenomena observed during its course enabled the Alexandrians to predict even political and economic events. The Roman authors, echoing earlier beliefs and ideas, tell us that people were still afraid of Sirius' destructive power and tried to appease him with *victimae numinibus* and votive offerings of replicas of stars.[26] The Christian writers, misinterpreting the word «κύων» (the dog) as ὁ γεννῶν, identified the constellation with the Supreme divinity. In spite of his important position in men's lives, especially among the agricultural population, the only representation of Sirius on coins is to be found on Kea, where he is depicted as a dog surrounded by rays.[27]

21. *IG* XII. 5, 599, 604, 619.

22. *IG* II. 5, 535, 536, 538.

23. For Sirius in general and all the relevant bibliography, see A. Bouché-Leclercq, *L'astrologie grecque*, Paris 1899, 55, 61, 74, n. 1, 79, n. 1, 125, n. 2, 129, n. 1, 137, n. 2, 140, 186, 226, n. 2, 227, 230, n. 3, 354, n. 2, 366, n. 2, 367, n. 1, 476, n. 2, 541, n. 1, 609. Also G. Gundel, *De stellarum appellatione*, Gissae 1907, 125-138, and more recently A.B. Cook, *Zeus. A Study in Ancient Religion*, Vol I, New York 1965, 299.

24. *Scholia in Apollonium Rhodium*, 498-527 a. C. Kerényi, *Dionysos*, Princeton 1976, 77, mentions the Egyptian myth of Jachem, who was a local variation of the corresponding myth of Aristaeus. Behind this name, however, Bacchus rather than Aristaeus seems to be concealed. This is yet another indication of the close interrelationship between the two gods. It is not certain whether the myth was created in Greece and its transference to Egypt with Bacchus as the hero was connected with his expedition to Egypt, or whether on the contrary the myth started out in the East and when it arrived in Greece the original figure of Jachem was split into two individuals, Bacchus and Aristaeus.

25. Cicero, *De divinatione*, I, 57. 130.

26. A.H. Krappe, "Apollon", *SteMat* 19-20, 1943-1946, 115-131.

27. Another attestation of Sirius on coinage, directly connected with Helius, comes from Syrian Chalkis (Aleppo) in Imperial times. A standing male figure is depicted with a rayed diadem and holding a palm frond, javelin and shield, with the inscription ΗΛΙΟΣΕΙΡΟΣ. For this, see *HN*, 778.

It is interesting to note that on the issues of the cities of Kea Aristaeus is depicted less frequently than the other gods, like Apollo and Dionysus. On the other hand, when the cities came together to form the League, in the 2nd c. BC, they used only one type: Aristaeus and Sirius or the star. In other words, they depicted the paramount god of Kea, the god of all the Keans, and a unique symbol, which characterized the island, the constellation of Sirius.

The star, which may be connected either with Aristaeus and Sirius or with Apollo, belongs to the same iconographical cycle. On the coins of Corcyra and Cyrene the star is depicted either as the principal type or as an accessory symbol,[28] while on the coins of cities, where the cult of Apollo was especially prevalent, the stars were essential symbols.[29] The cult of stellar and solar phenomena was, in addition, particularly widespread on Kea. One of the oldest traditions concerns the Nymphs who, terrorized by a lion, deserted the island and took refuge in Karystos.[30] The presence of the lion, regarded as the pre-eminent symbol of the sun,[31] occasioned terrible heat and drought. The similarity between the traditions of the Nymphs and of Aristaeus is obvious and betrays the dread of the inhabitants of Kea and the Cyclades in general of the fearful droughts they experienced. Apart from its religious symbolism[32] and metrological value,[33] the star as a numismatic type probably also had political implications. It appears on the coins of the three Kean cities in the 3rd c. BC, and its likeness to the emblem of the Macedonian dynasty strengthens the hypothesis that it contained a reference to the contemporary political powers.[34]

The myth about the creation of Aristaeus' new swarms of bees is characteristic of the regeneration of the soul: of birth and death. The life of the bull is renewed in the life of the bees, which were called by Porphyry«βουγενεῖς». Moreover, the invention of beekeeping, whose beginnings were laid in Thessaly, whence it spread all over Greece and to Kea, was clearly one of the main reasons why the bee became one of the common types of the Greek mints and one of the principal ones on Kea.

The bee, however, was not only an appropriate symbol for Aristaeus. Pausanias writes that the inhabitants of Delphi told how the (second) temple of Apollo was built of birds' feathers and beeswax. In the Homeric Hymn to Hermes, Apollo describes bees that possessed prophetic powers, and later in Aristotle these prophetic powers were transformed into the power of bees to "presage winter and water". Bees also nourished Zeus, who was nicknamed Melissaios, in

28. P. Gardner, "Floral Patterns on Archaic Greek Coins", *NC* 1881, 1-7, and J.N. Svoronos, "Sternbilder als Müntztypen", *ZfN* 16, 1888, 219-232.

29. See for example Miletus: Deppert-Lippitz, *Milets*, pls. 35-37.

30. K. Chr. Storck, *Die ältesten Sagen der Insel Keos*, Mainz 1912.

31. W. Deonna, "La grenouille et le lion", *BCH* 74, 1950, 1-9.

32. J.N. Svoronos, op. cit., 226-227.

33. The simplification of the numismatic type as an indicator of lower value is known from many mints.

34. D.P. Dimitrov, M. Cicikova, *The Thracian City of Seuthopolis*, BAR 38, 1978, where the star is considered an attribute of the coins of Cassandros. Also H.W. Ritter, "Zur Sternsymbolik in Antigonidischen und Argeadischen Makedonien", *Ἀρχαιογνωσία* 2, 2, 1981, 159-205.

the sacred Cretan cave, and Melissa and Amaltheia, daughters of King Melisseus, fed him on milk and honey. Dionysus, too, was fed on honey by Aristaeus' daughters, and according to Ovid he himself also discovered honey. As for the initiates into the Dionysiac Mysteries, the god, after being torn to pieces, came back to life as a bee, like the similar episode in the creation of Aristaeus' swarms of bees.[35] Bees, furthermore, were associated with the cult of Artemis, as it manifested itself in the cities of Ionia, and in particular Ephesus, while on Kea the bee appears on the reverse of the coins with the unique female figure.[36]

From the other numismatic types, the dolphin[37] depicted on Archaic issues can be connected with Apollo or Dionysus,[38] but the bunch of grapes depicted on many issues, especially at Ioulis, where his cult was very common, is purely Dionysiac in character. The amphora may also symbolize this god, but its significance is more probably commercial than religious.[39]

The choice of a cuttlefish as a pictorial type on the Koresia coinage does not seem to have any obvious significance,[40] and E. Babelon's opinion that it was connected with the Sminthian Apollo is not very convincing.[41] A first hypothesis that could be made is that the choice of a cuttlefish was due to its resemblance in shape to the turtle on the Aiginetic coins; this suggestion has already been proposed for a whole series of Archaic Cycladic coins.[42] Although such a mechanical explanation has its dangers, it is the only one that can be advanced with any probability. The known mythological traditions on Kea never mention cuttlefish, and its role in the island's economy is equally unknown.

35. All the relevant bibliography can be found collected together in A.B. Cook, "The Bee in Greek Mythology", *JHS* 15, 1895, 1-24. O. Keller, *Die antike Tierwelt*, Band I, Leipzig 1909, 424-431; and L. Bodson, *IEPA ZΩIA; contribution à l'étude de la place de l'animal dans la religion grecque ancienne*, Bruxelles 1978, 38-43. For the numismatic iconography, J. Nivaille, "Le type de l'abeille dans le monnayage grec", *CENB* 15.4, 1978, 61-69; 16.1, 1979, 1-9 and 16.2, 1979, 38-43.

36. Ioulis, series XII.

37. I wonder if there is always a dolphin depicted on the coins and not a tuna fish in a stylised rendering. If this is the case, then we could recall the tale of Aelianus, *De natura animalium*, XV. 3, narrating how large numbers of this fish travelled from Hipponium to the Euxine at the rising of Sirius.

38. For the dolphin in general, see E.B. Stebbins, *The Dolphin in the Art of Ancient Greece and Rome*, Wisconsin 1929, especially 63, n. 13 and 77-85. D. Flusser, "Tales about Dolphins in the Greek World", *SEFUNIM* II, 1967-8, 17-27. L. Bodson, op. cit., 52, 56. Cl. Brénot, *Le Béstiaire des monnaies, des sceaux et des médailles*, Catalogue of the exhibition in the Hotel de la Monnaie, Paris, 1974, 81-93. In relation to Dionysus, E.B. Stebbins, op. cit. 60-72, H. Herter, "Die Delphine des Dionysos", *Ἀρχαιογνωσία* 1, 1, 1980, 101-134. W. Burkert, *Homo Necans; The Anthropology of Ancient Greek Sacrificial Ritual and Myth*, Berkeley, Los Angeles, London 1987, 200-201. For a dolphin figurine dedicated in the shrine at Ayia Eirene, M. Caskey, "Ayia Irini, Keos: The Terracotta Statues and the Cult in the Temple", in *Sanctuaries and Cults in the Aegean Bronze Age. Proceedings of the 1st International Symposium at the Swedish Institute in Athens*, 1980. Stockholm 1981, 127-136.

39. The types connected with wine are common to many of the Aegean islands, and are probably related to the trade of their excellent wines and to the cult of Dionysus.

40. Aelianus, *De natura animalium* I, 34, 41, 44, XI. 37; O. Keller, *Die antike Tierwelt*, Leipzig 1909, 513-516.

41. *Traité* II. 1, 1291,1292, n. 1. In the representation to which he refers the cuttlefish is probably just one of the well-known conventions denoting the sea and has no symbolic meaning.

42. *ACGC*, 45.

On the coins of Kea appears also one female figure, on the Ioulis issues, identified sometimes as Artemis and sometimes as Aphrodite. Both are connected with the myth of Ctesylla, or Cydippe, who was worshipped at Ioulis in association with Aphrodite, and on the rest of Kea with Artemis.[43]

According to the myth told by the later writers Nicander and Liberalis,[44] Ctesylla, the daughter of Alcidamas of Ioulis, took part in the festival of the Pythia at Karthaia, where the Athenian Hermochares fell in love with her and asked her father for her in marriage. He gave his consent, swearing by Apollo. When the festival was over, however, Alcidamas went back on his word and looked around for another husband for his daughter. Hermochares, distressed by the way things were going, went to find Ctesylla, who was making a sacrifice in the temple of Artemis. Ctesylla fell in love with him and, unbeknownst to her father, they ran off to Athens. But the wrath of the gods with Alcidamas for having broken his oath had not passed, and Ctesylla died in childbirth. While preparations were being made to give her the proper honours, a dove took flight from the funeral couch and the body of the girl vanished. The oracle instructed Hermochares and the Keans to build a sanctuary to Ctesylla at Ioulis, and also in the rest of Kea. Thenceforth the people of Ioulis worshipped her as Aphrodite, the goddess of love and marriage, and the other Keans worshipped her under the eponym Ekaerge, an epithet they also applied to Artemis, the goddess of childbirth.

It may therefore be supposed that the female figure on the coins of Ioulis is best identified with the local heroine Ctesylla, who possesses iconographical elements of both Artemis and Aphrodite but without their established attributes.

43. Callimachus, *Aetia* 75. The tale of Acontius and Cydippe, whose clan, Acontiadae, were honoured at Ioulis, is based on Xenomedes' mythological history of Kea.

44. Antoninus Liberalis, *Metamorphoseon synagoge* I. Ctesylla.

CHAPTER 3

NUMISMATIC SERIES

KORESIA

The Archaic coins traditionally considered to belong to Koresia are the only ones whose attribution has hitherto not been questioned.[1] This is because of the abbreviated ethnic ϘO that occurs on nearly all its coins. In addition, the extremely rare city badge, the cuttlefish,[2] turns up again as a numismatic type in the later issues, thus confirming the version of the Archaic coins.

Three different series that were struck in the Archaic period can be distinguished according to their obverse type.

Series I. AR
Obv. Cuttlefish Rev. Incuse square **nos. 1-4 pl. 1**

The only surviving examples of this series are two staters, one hemidrachm and three obols. Their weights follow the Aiginetic system. The flans are somewhat thin and wide.

The cuttlefish of the obverse type is rendered with a greater or lesser degree of realism, and usually in strong relief. The inscription ϘO is not discernible on any of the known examples and very probably never existed.[3]

The incuse on the reverse is of the "Union Jack" type (four segments), which in some cases shows signs of developing into a more regular shape.

It is evident from their state of preservation that the coins of this series had been in circulation for a long period, and in some cases the die was already damaged when it was used.

Series II. AR
Obv. Cuttlefish, dolphin, ϘO Rev. Incuse square **nos. 5-33 pls. 1-2**

Series II comprises the main body of the Koresia numismatic output at this period. Altogether 48 coins of all the fractions have survived, excepting the overstrucks. Their weights conform to the Aiginetic standard. The flans are quite thin and wide.

The cuttlefish of the obverse type is broader than in the preceding series and quite naturalistic. The dolphin is usually rendered as if viewed from above, and straight, resembling a tuna.[4] It is

1. *Reisen*, pl. XXVII. Gr. M., 14-15. *Traité* II, 1289-1294. For the attribution to Koresia of coins with two dolphins, see Meynaerts, *Description de la collection de médailles antiques en or, grecques, romaines, byzantines et visigothes, recueillies par J. P. Meynaerts de Louvain*, Gand 1852, 14, n. 44.

2. Seen again on a coin of 5th c. BC from Lycia; Brett, no. 2322.

3. The inscription ϘO is preserved on a stater in Berlin, but not the dolphin. The differentiation in the iconography, as well as the degree of its preservation, make its authenticity suspect. See Cat., Mint of Koresia, Doubtful I.

4. If this is the case, then we mist refer once more to Aelianus, *De natura animalium* XV, 3. It seems that the big stream of immigration of these fishes from the west which was observed during the rising of Sirius, a period of great importance for the Keans, caused an enormous impression to them.

only shown with the characteristic curve in few examples. These differences in its representation, however, do not appear to have any chronological significance, since they occur on coins whose incuses are not chronologically distinct.

The poor preservation of most of the coins does not always allow the inscription to be read. Most probably, however, the letters of the ethnic always followed the same arrangement, the ϙ to the left of the cuttlefish and the O between it and the dolphin, on the right.

A feature of this series is its long duration, which is apparent from the incuses used, beginning with the "Union Jack" type (four segments) and ending with incuses with broad diagonal bands and St. George cross (small squares). In most instances, especially on coins of small fractions, the incuses occupy a relatively small space and appear to come from dies considerably smaller than the flans available, which may have been destined for other issues.

They are in the same poor state of preservation as those of series I, and the long period of use of the dies contributed to the loss of much of the detail in the representation even before the latter was stamped on to the coin

Series III. AR
Obv. Dolphin, ϙO Rev. Blank or incuse or K within incuse **nos. 34-37 pl. 2**

The third series of the Koresian issues is in fact a series of fractions, since it consists only of hemiobols and coins of even lower values. It does not appear to have been particularly large, but it is characterized by peculiarities on both faces. The obverse type changed radically as the principal device, the cuttlefish, disappeared and all that remained was the accessory symbol, the dolphin, together with the ethnic. The dolphin as a rule faces left, except in those cases where the K appears on the reverse, when it faces right.

The reverse is formed in three different ways: a) the surface is left smooth; b) the four segments incuses, similar to those of the coins of higher values are used;[5] or c) a square incuse is formed with a K inscribed in it. The last type has raised many questions about its attribution. The K has been thought to denote Karystos or Kalymnos, and other mints as well apart from Koresia. In spite of the problems posed by the curious formation of the incuse in question, it does not seem justifiable to disassociate this series from Koresia,[6] especially since it is difficult to attribute the obverse type and the ethnic ϙO to any other city than Koresia, where these have already appeared. We should perhaps suppose that the small series III of the fractions was struck in the final years of operation of the Archaic Koresian mint, at which time a more "classical" form of incuse was in use, or even in the first years of the Classical period.

5. Chiefly incuses of series II.

6. *Traité* II, 1090, 1294, n. 7: "il n'est pas sûr qu'elle soit de Corésia dont le nom n'a pris le K à la place du ϙ, comme initiale que beaucoup plus tard".

The chronology of the Archaic Koresian issues is especially problematical because of the lack of coins from hoards or other dated groups. It is therefore only possible to construct comparative chronologies based on the shapes of the coins and the forms of the incuses. As regards shape, the flans are quite broad and thin, even in the first issues, which means that from the point of view of technique they should be assigned in a later phase of Archaic minting, when spherical flans had already been abandoned.[7]

The earliest incuse to appear at Koresia was an evolved form of the "Union Jack" type; this was followed by "Mill Sail" and "United or Staggered Triangles" incuses. In Aigina these three types were all in use at the same time in Period II of its mint, dated to 540-510 BC, and they continued into the following Period III, which extended from 510 to 480 BC.[8] At Koresia the more evolved form of the incuse, together with the shape of the flans, and the fact that Kea must have followed the experiments at Aigina, led us to place the first issues of the city in around the middle of the Aiginetic Period II. Series I and part of Series II, in which these three types of incuse were used, should therefore be assigned to the first phase of the Koresian issues, dating to ca. 520-480 BC.[9] The next Koresian phase is characterized by incuses divided by broad diagonal bands and forming four small squares. These types, based on the chronologies of other mints, are considered to be among the latest and assigned to the end of the Archaic period and the first years after 480.[10] Incuses of this type or their variations, appear in certain issues of series II and III.

The numismatic activity of Koresia in the Archaic period may be reconstructed as follows: its mint began to strike coins of both types, those depicting the cuttlefish with and without a dolphin, almost at the same time, at the end of the 6th c. BC.[11] The issues of larger fractions without a dolphin were apparently interrupted at some point, probably in 510/500 BC, while those with the dolphin continued afterwards until 480. To this final phase should also be added the very small fractions that end in the issues with a K in their incuse.[12]

7. *The Elder Turtles*, 1.

8. According to Holloway's classification, *The Elder Turtles*, 17, 18. Holloway's opinions have been used only as a base for reference. Since him new datings of Aigina mint have been arised. For the most recent view with the relevant bibliography, see H. Nicolet, S. Gjongecaj, "Le monnayage d'argent d'Égine et le trésor de Hollm (Albanie) 1991", *BCH* 119, 1995, 283-332. Nevertheless, lacking of an absolute chronology of Aigina's mint, any attempt for dating the cycladic coinages remains doubtful.

9. According to the distinction made by Holloway, *The Elder Turtles*, 14, Period II, Groups 5-15, is characterized by the contemporaneous use of the "Union Jack", of the forming "5-square" incuses and the "Mill Sail" type. Period III, Groups 16-18, dating to 510-480 BC, is characterized by the contemporaneous use of the incuses with five squares, incuses of the "Mill Sail" type and the "skew".

10. *ACGC*, 46 and T. Hackens, "Le monnayage de l'atelier de Délos à l'époque archaïque", *BCH Suppl.* I, 1973, 221, 223.

11. The higher relief of the cuttlefish in series I suggests an earlier date for it in relation to series II.

12. For radical changes in the numismatic types of the Cyclades after the Persian Wars, see *ACGC*, 46.

These were the last Koresian issues to be minted for a long time. The Persian Wars and the foundation of the Athenian League were not conducive to the continuation of the mint, and in the first decades of the 5th c. BC it ceased to operate. The city's numismatic activities appear to have recommenced at the end of the 4th c. BC, but this second phase of its mint cannot compare with the production of the Archaic period. It comprised only four series, each of which is represented by very few examples, which cover a relatively short chronological span.

Series IV. AE
Obv. Cuttlefish Rev. Grape bunch, KO **nos. 41-58 pl. 3**

This series follows, in the obverse type, the pictorial tradition of the Archaic issues of the city. The three different types of treatment of the cuttlefish do not necessarily also signify a differentiation of the issues, although they assist in a relative chronological classification.

The size of the coins varies between 12 and 10 mm, with an average diameter of 11 mm, and their weight varies between 2.50 and 1.00 gr, with an average weight of 1.59 gr. Their great differences are apparently due to the considerable wear visible on most of the coins and are not a distinguishing factor between different fractions. The die axes have no particular orientation. For the twenty-three known coins twelve dies were used for the obverse and thirteen for the reverse.

Coins of this series came from the drain found during the excavations of the settlement at Koresia, together with archaeological material dated to the 4th c. BC.[13] Although the nature of the drain does not preclude the possibility that the coins found their way into it at a later time, unrelated to the period of its use, it nevertheless constitutes useful chronological evidence. Moreover the reappearance of the Archaic type, the abbreviated ethnic and the shape itself of the coins make it very probable that the series was in use at the end of the 4th c. BC and can be classified as the first of the Koresian issues in this period.

Series V. AE
Obv. Apollo r. Rev. Grape bunch, r. bee; l. N, star; K O P H **nos. 59-67 pl. 3**

With this series Koresia broke with its Archaic pictorial tradition and entered the iconographical koine of the cities of Kea.

The coins are characterized by thin, wide flans measuring 19-15 mm and weighing from 5.00 to 2.93 gr, with an average size of 17 mm and weight of 3.56 gr. The die axes follow an oblique direction, especially towards the lower part. For twelve coins two dies can be identified for the obverse and six for the reverse.

On all the coins even when badly worn the monogram N can be distinguished in the field to the left of the grapes and a bee on the right, linking this series with the later series VI, in which the bee forms the principal type.

13. The drain was discovered in the last days of the 1986 excavations conducted by the University of Athens, the Ephoria of the Acropolis, and the DAI. Work on the site stopped in the following year, hence there is no further evidence relating to it.

The condition of the coins shows that they had not been in circulation for a long time and had suffered only a little wear from use.

Stylistically the obverse types preserve the characteristics of the late 4th/early 3rd c. BC treatment of the figures.

Series VI. AE
Obv. Apollo r. Rev. Bee, KO PH **nos. 68-83 pls. 3-4**

This series is characterized by its absolute similarity with the corresponding issues of Ioulis (see Series VII), from which it is distinguished only by the different ethnic. In cases where the inscription is not clear, the attribution of the coins is almost impossible. The very poor condition of the surviving coins from both Koresia and Ioulis, however, does not permit many observations, especially the identification of similar dies on the coins of the two cities.

Two examples of this series are also the only coins from Kea that carry the stamp of another mint. It was probably a female head.[14]

The coin flans are large and wide, measuring 21-18 mm and weighing 7.18-3.85 gr. The averages are 19 mm and 5.71 gr respectively. The great differences in the weights do not appear to indicate different coin denominations, but to be due rather to carelessness in adhering to a predetermined weight on the part of those responsible for the mint.

The utilization of numismatic types in common with Ioulis remains puzzling. The endeavour to indicate a rather close connection between the two cities is obvious, but the invariable inscription of the ethnic gives no clue as to which was the responsible numismatic authority. This insistence in emphasising their own ethnic implies a certain equality in the relations between Ioulis and Koresia, the result of which was they chose common pictorial types, while each city retained the right of inscribing its own ethnic. Stylistic criteria suggest a date for the series at the end of the 3rd c. BC,[15] and this is also perhaps the only period in which this series could be fitted politically, because in the next century Koresia was annexed to Ioulis and ceased to mint coins.

Series VII. AE
Obv. Aristaeus r. Rev. Eight-rayed star, between the rays K O P H, ⊙ or ΨO nos.84-100 pl. 4

This issue, similar to III of the Koinon, is probably the final one of the mint,[16] a fraction of the preceding series with which it is connected by the legend KOPH and the type of the letters.

The flans of the coins are small with a diameter of 13-11 mm, the greatest concentration being around 13 mm. They weigh from 2.69 to 1.04 gr, an unusually extreme range. Among the middle range, 2.51-1.54 gr, the average is 1.94 gr. For the eighteen known coins, six dies can be distinguished for the obverse type and thirteen for the reverse.

14. Two more, one countermarked, come from the Athenian Agora, see J. Kroll, *Agora*, 252, no. 837.

15. Deppert-Lippitz, *Milets*, n. 54, pl. 23. no. 690 ff (225-190 BC).

16. One more, not included in the Catalogue, was found at the Athenian Agora with 2nd c. BC material, see Kroll, *Agora* 252, no. 836.

In addition to the ethnic, most of the coins carry the monogram ⊙, probably the identifying mark of the individuals in charge of the mint.

Koresia's numismatic activity was characterized by small short-lived series. The devastation of the city by an earthquake at the beginning of the 4th c. (377 BC) was probably also a severe blow to its economy, from which it apparently never recovered, and in the 2nd c. BC it ended by joining up with the settlement of Ioulis. The installation of the naval base of Patroklos, which brought some life to the economy of the city, was not a suitable occasion for a broad revival of its mint. The crews and troops of the Ptolemies brought with them Ptolemaic coins, of which large numbers have been found in the district,[17] and which constituted a strong, widespread, common coinage. At this time Koresia had neither the ability nor the right conditions to carry on minting coins since her currency needs were met by the Ptolemaic coins. Moreover her synoecismus with Ioulis in the next century, from the economic point of view, and the beginning of the issues of the Keans, on the currency side, did not leave much scope for a renewal of her minting activities.

IOULIS

The attribution to Ioulis of the Archaic coins bearing the type of a bunch of grapes and a dolphin, has not met with any particular objections, while on the other hand the coins depicting only a bunch of grapes have at times been attributed to other cities.

This numismatic type is very common all over Greece. The widespread cult of Dionysus, the good quality of the grapes in certain localities and lastly, its simple shape, which can be easily applied to the coin flans, giving at the same time the most decorative results, made it a very fitting choice for many cities.[18]

Based on the rendering of the bunch of grapes, whether triangular or tripartite, Imhoof-Blumer originally,[19] and Artemis-Gyselen more recently,[20] attributed the tripartite bunch of grapes (which Svoronos considered to be the numismatic type of Mykonos) to Tinos, leaving the triangular form to Ioulis.[21] Wroth[22] and Babelon[23] attributed both types without distinction not only to Ioulis but to Karthaia as well.

17. See J.F. Cherry, J.L. Davis, "The Ptolemaic Base at Koressos on Keos", *BSA* 86, 1991, 9-28.

18. J. Marion, "Le thème de la grappe de raisin dans la numismatique antique", *CahN* 26, 1970, 101-111.

19. *Gr. M.*, 15-19.

20. L. Artemis-Gyselen, *Die Antike Munten van Tenos*, Katholieke Universiteit te Leuven, 1976. Eadem, "Les monnaies archaïques de Ténos", *RBN* 123, 1977, 5-15

21. I.N. Svoronos, «Νομισματικὴ καὶ ἱστορία τῆς ἀρχαίας Μυκόνου», *BCH* 17, 1893, 455-501 and especially 476-478.

22. *BMC* Karthaia, 24-33.

23. *Traité* II, 1885-1892.

In 1957 R. Holloway, studying the question of coins depicting grapes, independently of the presence or not of a dolphin, came to the conclusion that these issues should be disassociated from all the mints that had previously been suggested. Apart from the purely stylistic differences and his own objections to Blumer's classification, he advanced two basic reasons for doubting these attributions: the disproportionately large number of fractions in comparison with the corresponding staters, and the weight of a large part of the fractions, about 2.50 gr, which could not be associated with any of the known standards of weight, and particularly with the Aiginetic system.[24]

A basic criterion for an in toto attribution of the coins with grapes is the type of the incuse. As far as Kea is concerned, a comparison of the incuses of the coins depicting grapes, with or without a dolphin, with the coins of the other cities on the island showed that the issues with the grapes need not be completely disassociated from Kea. Of the issues with a bunch of grapes alone, without a dolphin, it does in fact seem possible to attribute the triangular type to Ioulis, as Blumer proposed. Nevertheless, the attribution of some of these coins, taking into account the incuse, the weight and the style of the grapes themselves, remains very problematical.

Irrespective of any reservations, which appear to be insuperable in our present state of knowledge, concerning the attributions of the coins with a bunch of grapes, we must suppose that some of them were struck at Ioulis during the Archaic period. We can distinguish three main numismatic series with many variations as regards the position of the accessory symbols.[25]

Series I. AR
Obv. Bunch of grapes Rev. Incuse square **nos. i-xxvi pl. 1**

As has already been mentioned, this series is the most uncertain. We should perhaps accept that it is a series of chiefly small fractions as a few hemidrachms and a trihemiobol.[26] On the other hand on the obols the treatment of the grapes does not present special problems and usually follows the regular form of the triangular shape. Most of the obols have incuses formed with four small shallow squares. In some cases the incuses show that the dies were already badly damaged at the time of use, and some of them were broken in many places. Often only the hollow square of the incuse has survived, while on other coins the die seems to have been struck twice. A very careful attribution of these coins based on the shape of the bunch as well as the incuse type makes it possible to surmount the metrical problems posed by Holloway, since we only have to consider coins whose weights accord with the Aiginetic system.

24. These are unpublished notes from the seminars presented in 1957 at the Summer Seminar of the ANS, a copy of which was given me by Dr Mando Oeconomides. Recently, K. Sheedy, *The Archaic Coinage of Paros and the Cycladic City-States*, University of Sydney PhD, 1987, has preferred to leave open the question of the attribution of the coins bearing a bunch of grapes.

25. It would seem that the changes in the iconography do not necessarily denote a chronological difference in the issues, nor do they appear to be indications of the denominations of the coins.

26. In the catalogue all the doubtful issues have been included that appear to have some possibilities of belonging to Kea, either because of the form of the bunch of grapes or that of the incuse. However the material remains very fragmentary and for that reason the classification was made on the basis of the subdivisions first and the incuses second. From the examples known to date the two ways of classification do not clash.

Series II. AR
Obv. Bunch of grapes, dolphin Rev. Incuse square **nos. 1-14 pl. 1**

Series II appears less problematical as regards both the treatment and the regularity of the issues.

In the obverse type two different tendencies can be distinguished. Either the dolphin is shown upwards to the left of the grapes and very exceptionally to the right of them, or a smaller cluster is sprouting from the left side of the bunch while the dolphin, always downwards, keeps the right side. These differences do not seem to be chronological factors since all these types are accompanied by incuses of the same type.

It is apparent from the variety of the incuse types, comprising "5 Triangles", "Mill Sails", "United Triangles", "four triangles" and "St. George cross", as well as incuses divided by thin diagonal lines, that this series was struck over a considerable period of time.

Series III. AR
Obv. Dolphin, small grape bunch Rev. Incuse square or blank **nos. 15-17 pl. 1**

This series much resembles the corresponding Series III from Koresia. Iconographically, the basic type steadily acquires a secondary importance, while the previous accessory type, in this case the dolphin, becomes the basic one. In terms of denominations, this series too, of which few examples have survived, consists of very small fractions, while on the technical side the absence of an incuse on the obverse is repeated, as happened at Koresia. Probably the very small size of the coins made regular striking difficult and obliged the engraver to use only a hammer with an expanded surface. Where incuses exist, they are of the type with the thin diagonal lines, which also appear on the larger fractions.

The Ioulis series start at almost the same time as those of Koresia, as is clear from the use of the "Union Jack" incuse. Two tendencies can be observed in regard to the formation of the incuses, which also reflect different chronological phases. The first is orientated towards Aigina and is characterized by irregular incuses of the "5-Triangle", "4-Triangle", "Mill Sail" and "United Triangles" types. This phase corresponds to Periods II and III at Aigina and is contemporary with the equivalent phase at Koresia. In date it should be from 520 to 480 BC.[27] The second phase is characterized, like the one at Koresia, by incuses with four small shallow squares and thin diagonal lines, from which it appears that the influence from the other Cycladic mints was greater. Their use dates to the end of the Archaic period and the first years after 480 BC. And their appearance in smaller fractions also confirms their later chronology.

The numismatic activity of Ioulis, which started up again in the 4th c. BC, was one of the most prolific on Kea both as regards the rate of production and the quantity, but also in its chronological duration, since it covers a wide period of time up to the 1st c. BC.

27. *The Elder Turtles*, 17-18. *Asyut Hoard*, 76, where the "staggered triangles" are dated to 500/490-480 BC.

Series IV.AR
Obv. Zeus-Aristaeus r. Rev. Bee, head of Sirius. In a pointed circle **nos. 18-21 pl. 2**

In the 4th c. BC Ioulis, like Karthaia, started minting coins again in silver.[28] Although the coins that have survived are few, two issues can be distinguished.

Issue 1 is characterized by the depiction of Zeus on the obverse, in conformity with an artistic tradition that seems to have been totally alien to Kea.[29] On the reverse the symbols of Ioulis and Karthaia, the bee and Sirius, are visible, but the inscription that can be read on a coin in Berlin is ΓΛΑΥ.[30] On the second coin in the same issue the inscription cannot be deciphered at all and we are therefore unable to tell whether the same was repeated in this case. Fox, who published the Berlin coin, considered that ΓΛΑΥ was an ethnic and attributed the coin to Glaukonnesos.[31] Nevertheless, the coin types and especially the Sirius make the attribution almost certain, and the similarities with the second issue of the same series confirms this view, and thus ΓΛΑΥ must be interpreted as the name of some local magistrate.[32]

Issue 2 is characterized by the rendering of the figure identified as Aristaeus and the slight differences in the symbols depicted on the reverse.

A small circular object can be discerned in the right field below the bee's wing, but it is not clear on either coin and cannot be identified. It is probably a silphium flower bud. If this is the case, then Ioulis concentrated in the numismatic types of the first series, with which it began its minting activities, all the attributes of Aristaeus, even though silphium is not mentioned in the traditions about him connected with Kea; it also adopted the cult of the local hero in the name of all the Keans. On the other hand, the depiction also of Sirius, the characteristic badge of Karthaia, indicates some connection between the cities, among which Ioulis seems to have played a leading role, and we could therefore regard it as commemorating the union of the cities.

Series V. AE
Obv. Zeus-Aristaeus r. Rev. Bee **no. 22 pl. 2**

The coin types of Series IV also appeared on a series of bronze coins that probably formed the transition from the silver to the standard bronze issues. The wear on the only surviving coin makes it impossible to detect the existence of an inscription or symbol on the field.

28. See Karthaia, series III.

29. For other numismatic parallels, see the illustrations of G. Le Ridder, *Le monnayage d'argent et d'or de Philippe II frappé en Macédoine de 359 à 294*, Paris 1977.

30. Cat. no. 19.

31. C.R. Fox, "On a Coin of Glauconnesus", *NC* 1869, 25-27, who had no reservations about its genuineness.

32. R. Münsterberg, *Die Beamtennamen auf den griechischen Münzen*, Hildenscheim, New York, 1973 (reprint), 115, 119.

Series VI. AE
Obv. Aristaeus or Apollo r. Rev. Bunch of grapes, IOY KE **nos. 23-26 pl. 2**

This series, of which very few examples have survived, also belongs to the late 4th c. BC tradition.

It is noteworthy that series with similar types were also minted at Karthaia[33] and the Koinon.[34]

Although four samples three different issues can be discerned. The first one, who possibly shares its obverse die with a coin of the Keans[35] seems to be a heavier fraction weighing around 3.09-2.24. On the contrary the two others are weighing less (1.22-0.94) thus being closer to the relevat series of Karthaia and Keans.

The third issue shows significant variants as it is the only one where Apollo is depicted, thus remaning unique in this group publicizing a common organization of the cities.

Series VII. XA
Obv. Apollo laurel-crowned r. Rev.Bee, IOYΛI or IOY **nos. 27-50 pls. 2-3**

This is one of the largest Ioulis series and can be separated into three issues.

The first, of which only nine coins have have been preserved, is characterized by the coincidence of its pictorial types with the corresponding Series VI of Koresia. The only difference lies in the inscription IOYΛI.

The flans of the coins are broad and thin, measuring between 19 and 17 mm and weighing between 6.50 and 4.76 gr, with mean values of 18 mm and 5.56 gr.

The considerable wear visible on them and the small number of surviving specimens imply that it was a small series in use over a long period. We may also speculate that it was only struck as a parallel to the corresponding series of Koresia with the intention of underscoring some "political" act between the two cities.

It is risky to date this issue on the basis of stylistic criteria. The Apollo type, for example, is found at Miletus from the end of the 4th c. BC and continues until the beginning of the 2nd,[36] while the well articulated body of the bee can be seen on coins from Ionia from to 480 to 133 BC.[37] A comparison with the Koresian issues and the type of the letters in the legend rather suggest a date at the end of the 3rd c. BC.

Issue 2, although it follows the coin types of 1, is quite different in the rendering of the figures, which display a metallic accuracy.

The coins have flat flans measuring between 19 and 14 mm and weighing from 5.10 to 3.46 gr, mean values of 16.5 mm and 3.76 gr. In general this issue appears to have been carefully produced, and the variations in the dimensions and weights are due to use and natural wear. The die axes are always vertical with only a slight deviation to the left.[38] Among the sixteen known coins, five dies were used for the obverse type and eight for the reverse.

33. It is likely that in the case of the coins cat. nos. 25 and 38 from Karthaia the same die was used for the obverse type.

34. Series I.

35. Cat. no. 10.

36. Deppert-Lippitz, *Milets*, n. 54, pl. 11 no. 339 (313/12-290 BC) and nos. 687-692 (225-190 BC).

37. Brett, see for ex., pl. 85, nos. 1819-1833.

38. J. Guey, "À propos de la position relative des axes des coins de droit et de revers: pour une numismatographie résolument statistique", *BSFN* 25, 5, 1970, 530-533.

Two ways of inscribing the ethnic are apparent, probably reflecting two different phases of the same issue. Most of the coins with the inscription IOY, written vertically, have seen much use, except for a very few that seem to have hardly been in circulation at all and must come at the end of the issue. On the contrary, the coins with the inscription $^{O\,Y}_{I}$ have virtually all suffered the same degree of damage, but it clearly appears to be less than on the preceding coins. It seems therefore that when the IOY issues were withdrawn from circulation they were replaced by issues having the same types but with a different arrangement of the letters of the ethnic.

Issue 3 constitutes a fraction of the preceding one. It has the same pictorial types and the inscription $^{O\,Y}_{I}$.

The smaller denomination is apparent from the different dimensions, 15-11 mm with an average of 12.8 for Issue 3, compared to the average of 16.5 mm for Issue 2, and from the differences in weight. The weights of Issue 3 range between 3.12 and 2.02 mm, with an average of 2.688 gr, in other words with lower limits than the lowest of 2. The use of the same types for both fractions, their careful separation in terms of size and weight, leaving no margin for overlap or confusion, indicate a very carefully produced series and an efficient organization of the mint. The same care is apparent in the die impressions, which stay within the margins of the flans, and the die axes, which always follow the same vertical angle with only a slight deviation to the left.

The archaizing figure of Apollo cannot be used as dating evidence because numismatic types often cling to earlier artistic traditions or reproduce more ancient works, for example cult statues.[39] Nor is the treatment of the bee at all indicative, since once the original type was established there was not much scope for variations. In any case, the style of the treatment as well as its small size in relation to the flan have parallels in 4th c. BC coins from the Troad.[40] Nevertheless, the shape of the coins, the type of the letters with the small dots at the ends and the characteristic Y probably date this series to the 3rd c. BC.

Series VIII. AR
Obv. Apollo laureate r. Rev. Sirius, IOY **nos. 51-78 pls. 3-4**

The same Apollo type as in Series VII 2 is shown on the obverse of the large fractional Series VIII. Its chief feature is the appearance of Sirius on the reverse, an unusual subject for Ioulis. In this series we should also include a large number of coins with the same types, on which the legend cannot be deciphered and which are usually attributed to the issues of the KEIΩN.

The first issue in the series is characterized by Sirius facing left. The flans are small and many of them have a slight concavity. In size they range from 15 to 10 mm, and in weight do not exceed 3.34-1.45 gr, with mean values of 12.75 mm and 2.25 gr. Their great disparity in weight seems to be chiefly due to their long period of circulation and the resulting wear.

39. L. Lacroix, *Les reproductions de statues sur les monnaies grecques. La statuaire archaïque et classique*, Liège 1949, 23-28.

40. SNG von Aulock, Troas, 7600.

The coins of Issue 2 closely follow the forms of 1, although the pictorial types differ appreciably. On the obverse, as far as we can tell from their very damaged condition, the rendering of the figures is entirely different, and in some instances it is even difficult to identify the figure shown.[41] Furthermore, on the reverse, Sirius faces to the right, which is rare on Kea, where he is generally depicted facing left. The attribution to Ioulis is confirmed by the legend IOY on a coin in Athens.[42]

The coupling of the types of Ioulis and Karthaia indicates that this series must belong to a period when the two cities had developed some form of close association. Other evidence for a more precise chronology does not exist. The stylistic criteria of the treatment of the obverse type of the first issue connect it with series VII, which is dated to the 3rd c. BC.

Series IX. AE
Obv. Aristaeus r. Rev. Eight-rays star, between the rays IOY **nos. 79-81 pl. 4**

Few coins in this series have survived, and they are very badly preserved. The iconographical types have parallels in Series VII of Koresia, XI of Karthaia and III of the Koinon. The appearance of numismatic series with the same types in all three cities is a particular characteristic of Kea issues and was probably intended to emphasize their connections. The rendering of the figure of the obverse type is very close to that in the preceding series. It was no doubt some kind of fraction.

Series X. AE
Obv. Aristaeus r., in a pointed circle Rev. Bee, IOY or IOYΛI **nos. 82-100 pl. 4**

This is one of the largest of the Ioulis series,[43] which can be separated into four different issues according to the rendering of the iconographical types and the denominations of the coins.

On the coins of Issue 1 the figure on the obverse is considerably different from the rest in the same series. The legend IOY is discernible on the reverse, written vertically in the field to the right of the bee.

The flans are small and the die impression is often off flan, creating a projection round the perimeter. In size they range from 14 to 11 mm and in weight from 3.98 to 2.50 gr. The die axes are chiefly vertical with only slight deviations. All the coins of the issue come from the same obverse and reverse dies and show great wear from their long time in circulation.

In Issue 2 the obverse type is surrounded, as in the preceding issues, by a dotted circle which usually coincides with the perimeter of the flan. Slight differences are apparent in the bee on the reverse, without departing from the actual motif. The inscription IOYΛI is always inscribed vertically in the right and in the left field is the monogram Є. The legend is usually interpreted as standing for IOYΛIE(ΩN). Nevertheless, although this is the traditionally accepted ethnic,[44] IOYΛIEYΣ is never found in inscriptions, only IOYΛIHTHΣ, and thus the E is not part of the ethnic, but some symbol.

41. For similar figures with a different interpretation see e.g. E. Simon, "Aphrodite Pandemos auf attischen Münzen", *SNR* 49, 1970, 5-19, Pl. 1, 2. S. Grunauer-von Hoerschelman, *Die Münzprägung der Lakedaimonier*, AMuGS VII, 1978, pl. 12, nos. 146-147.

42. Cat. no. 71. From Athens, see also Kroll, *Agora* 252, 839.

43. We can add one more coin from the Athenian Agora. Kroll, *Agora* 252, no. 840.

44. Steph. Byz. n. Ἰουλίς... ἐθνικὸν Ἰουλιεὺς καὶ Ἰουλιήτης.

The flans are relatively small, 16-13 mm, and the weights are from 4.97 to 2.20 gr.

On the coins of Issue 3 the obverse type is not appreciably different from that of 2. The treatment of the bee on the reverse is characterized by sharper ends. The inscription IOYΛI is written vertically in the right field, and on the left is the monogram Φ (ΔYT).

The flans are small, from 15-11 mm, with weights from 2.67 to 1.51 gr, the averages being 12.10 mm and 1.97 gr respectively. All the coins are very worn from use.

The small Issue 4 is probably a fraction within Series X; the flans are from 11 to 8 mm and the weights from 1.44 to 0.40 gr.

In conformity with parallels from other mints, Series X can be dated to the 1st c. BC.[45]

Series XI. AE
Obv. Ctesylla r. Rev. Bunch of grapes I O Y Λ I nos. 101-111 pl. 5

This series, too, is characterized by sharp differences in the pictorial types, on the basis of which it can be divided into different issues.

Issue 1 is connected with the corresponding one in Series X, not only by the monogram Φ, but also by the same scratching of the reverse.

Issue 2 is also connected with Series X2 by the monogram Є.

Issue 3 seems to be the largest of the series. On the reverse the inscription is arranged symmetricaly in relation to the grapes, forming a sort of frame around them.

The rendering of the female figure on the obverse, both on 2 and 3, finds close parallels to the figures of the following Series XII.

The flans have the same shape, although in 3 they are slightly smaller, with diameters from 20 to 15 mm, and weights ranging from 5.92 to 3.37 gr.

Apart from their great wear, the coins of this series are characterized by their careless manufacture, which produced aesthetically poor results. The rough workmanship as well as the rendering of the figure suggests a date in the 1st c. BC.[46]

Series XII. AE
Obv. Ctesylla r. Rev. Bee, IOY, within a wreath nos. 112-147 pls. 5-6

XII seems to be the largest series cut by Ioulis. The differences in the treatment of the types are minimal and do not justify a division into particular issues. This large series of very small fractions appears to have been in use for a considerable time and the coins suffered very great wear.

The sizes of the coins range from 14 to 7 mm and the weights from 2.60 to 0.7 gr, with averages of 10.26 mm and 1.314 gr respectively.

45. S. Grunauer-von Hoerschelman, *Die Münzprägung der Lakedaimonier*, AMuGS VII, 1978, pl. 20, V 53, V 54, V 59-V 61, 136 (31-7 BC); and A. Jackson, "The Chronology of the Bronze Coins of Knossos", *BSA* 66, 1971, 283-295, and especially 292, pl. 49, no. 42 (68/7 BC).

46. J.H. Kroll, "Two Hoards of First-Century BC Athenian Bronze Coins", *AΔ* 27, 1972 (1973) A΄, 86-120, pl. 38, nos. 4-9.

The treatment of the figure, wreath and bee is very reminiscent of that of the 1st c. BC Athenian bronze coins,[47] suggesting a probable date for the Ioulis issue in the same period.

Series X, XI and XII form part of the numismatic output of Ioulis in the 1st c. BC. They are connected to each other either by the representation of the bee, or, where that is missing, as in XI, by the use of common symbols and monograms. We can presume either that these series were contemporary and covered a wide range of fractions, or else that they circulated within a very short period of time and that thy were minted under the supervision of the same individual.

Series XIII. AE
Obv. Apollo r. Rev. IOY in a wreath **nos. 148-149 pl. 6**

This is a very small, fractional, series. All the coins are very worn. The conception of the reverse type is similar to that on series XII, the ethnic used instead of the bee, and so this series could be placed close to XII.

Series XIV. AE
Obv. Bacchus r. Rev. Bunch of grapes, IOY **nos. 150-163 pl. 6**

The numismatic types depicted in the small series of fractions XIII refer to the cult of Dionysus.

The diameters of the coins are 12-7 mm and the weights 1.77-0.55 gr, with mean values of 9.69 mm and 0.94 gr respectively.

In earlier publications the figure on the coins of Issue 1 was interpreted as being Bacchus Indicus[48] and as relating to the campaign of the god in India, in which Aristaeus took part. The same characteristics can be seen in the Bacchus on 1st c. BC Athenian coins. The choice of this particular type in Athens is connected with the ascendancy of Mark Antony, who wished to be identified with Bacchus and be regarded as the New Dionysus, and these coins date to 38/7 BC.[49] A similar date seems reasonable for the Ioulis issues.

Series XV. AE
Obv. Dionysus r. Rev. Grape bunch, IOY **nos. 164-165 pl. 6**

This series is also referred on Dionysus. The few and very worn specimen do not allow any comments on it. However, it is interesting to note that one of its coins has been found as far as Pella.[50]

47. A.S. Walker, *A Chronological Study of the Greek Imperial Coinage of Athens based on the Collection of the Agora Excavations at Athens*, University of Pensylvania Ph.D., 1980, 212, 219, fig. 3 for the latest chronology.

48. Leake, *Num. Hel.*, 23. M. Dumersan, *Description des médailles antiques de cabinet de feu M. Allier de Hauteroche*, Paris 1829, 59. D. Sestini, *Descrizione delle medaglie antiche greche del Museo Hedervariano*, Firenze 1830, 167.

49. J.H. Kroll, op. cit. *ΑΔ*, 27, 1972 (1973) Α΄, 98-99 and idem *Agora*, 252, no. 838, for one more coin found in Agora.

50. The same coin identified by Svoronos as being from Poiessa, I. N. Psyllas, *Ἱστορία τῆς νήσου Κέας*, Athens 1920.

Series XVI. AE
Obv. Bunch of grapes, IOY Rev. Bunch of grapes, IOY **nos. 166-167 pl. 6**

This is a small series of fractions. Only two coins have survived, and they have the same type on both sides, a very rare representation that was never seen on Kea again.[51]

Series XVII. AE
Obv. Bee Rev. Star (IOY) **nos. 168-188 pl. 6**

On the basis of a very few coins on which the inscription IOY can be distinguished the whole series with these types is attributed to Ioulis. Four issues can be distinguished which differ in regard to the treatment of the bee and the number of points on the star.

Issue 1 is characterized by its slightly larger and heavier coins and an eight-pointed star.

In 2 the bee is a slenderer version of the one depicted in 1. The star has six points and the ethnic IOY was added.

In Issue 3 the treatment of the bee is more abstract, and the star on the obverse becomes five-pointed.

Issue 4 must come at the end of the series; the bee type is a schematization of all the others. The star is shown sometimes with five and sometimes with six points. Although the different number of the rays of the star on the reverse could be a sign of different denominations, their correlation is not very clear.

The minting activity of Ioulis seems to have been much greater than that of the other cities, with very complete and metrologically fuller series. It recommenced its minting in the 4th c. with a small series of silver coins of the same weight as the Attic didrachm. This series fostered the cult of Aristaeus, and in this way the city assumed the role of the island's cult centre, in contrast to Karthaia, which remained faithful to the official Olympian pantheon. This opposition to the Olympian deities, the traditional patrons of Athens, probably reflected a certain political rivalry; and in fact in the 4th c. BC Ioulis was the centre of the anti-Athens movement which manifested itself on the island, and the focal point around which the cities of Kea organized themselves. It was no coincidence, then, that apart from the silver coins, which were probably issued to commemorate this movement, its minting operations also included the typical small bronze issues with the cities' ethnics and the common types of the Keans. The parade of force and the depiction of Aristaeus did not last for long. In subsequent issues his place was taken by Apollo, probably as a result of Ioulis' return to the Athenian League. The bee remained the permanent badge of the city.

One of the Ioulis series depicts Sirius, the badge of Karthaia, although the reason for the choice does not seem to correspond to any known historical event.

The 3rd century, under the suzerainty of the Diadochi and their functionaries, was not particularly important for Ioulis. Nevertheless, the Ioulis mint displayed a considerable level of organization which covered the circulation and needs of the city with full numismatic series.

51. L. Gyselen, *Die Munten van Tenos*, Leuven 1976, 109, class 13.

In the 2nd c. BC Ioulis's minting operations were interrupted and replaced by the issues of the KEIΩN.[52] In the 1st c. BC, however, it was the only city on Kea to start minting coins again, copying 3rd c. BC models, the chief feature being the many fractions that supplemented the basic series. The Ioulis mint, in addition, was distinguished by large series that remained in circulation over a long period, but without being renewed, as seems to have happened at Karthaia.

KARTHAIA

The reconstruction of the Archaic minting activity of Karthaia has always been a particular problem, the reason being the long-term uncertainties and doubts about the attribution to it of certain numismatic types. Of decisive importance in this context was the coin with an amphora and a dolphin that is today in Paris (cat. no. 18), in whose incuse the legend KAPΘ can be read. There has been no such lucky coincidence in the case of the type with an amphora but without the dolphin; this amphora, furthermore, seems to have been rather a common type used by many cities as their badge.[53]

Basing himself on the inscribed coin from Karthaia, Bröndsted was the first to attribute the coins with an amphora but without a dolphin to Kea.[54] Two years later the same opinion was maintained by E. de Cadalvène,[55] and it was followed by W. Wroth in the British Museum Catalogue[56] and Imhoof Blumer.[57] This attribution has recently been repeated by J. Kroll, N. Waggoner[58] and H. Bloesch.[59] A contrary view, assigning the type not to Karthaia but to Andros, was originally advanced by B.V. Head[60] and E. Babelon[61] and soon afterwards by D. Paschalis,[62] with the concurrence of I.N. Svoronos. C.T. Seltman removed the type entirely from the Cyclades and classified it among the first "heraldic" types of Athens.[63] This attribution, however, encountered many objections[64] and was soon abandoned. On the other hand, the uncertainty about whether

52. See p. 49.

53. R. Plant, *Greek Coin Types and their Identification*, London 1979, 117-119.

54. *Reisen*, Cat. III, where the type is included in the "Nummi incertae sedis civitatum Cei insulae". See also E. Beulé, *Les monnaies d'Athènes*, Paris 1858, 27, n. 2.

55. E. de Cadalvène, Recueil de médailles de peuples et de villes I, Paris 1828, 233.

56. *BMC*, 14-16.

57. *Gr. M.*, 13.

58. J.H. Kroll, N.M. Waggoner, "Dating the Earliest Coins of Athens, Corinth and Aegina", *AJA* 88, 1984, 327, n. 10.

59. S. Hurter, E. Pàszthory, H. Bloesch, "Archaischer Silberfund aus dem Antilibanon", *Festschrift für Leo Mildenberg*, Wetteren Belgium 1984, 117, 124-125.

60. *HN* (1) 609, 482.

61. *Traité* II, 1275-1278.

62. D. Paschalis, «Νομισματικὴ τῆς ἀρχαίας Ἄνδρου», *JIAN* I, 1898, 299-307.

63. Seltman, 6-15.

64. See for instance, J.H. Jongkees, "Notes on the Coinage of Athens", *Mnemosyne* 3. 12, 1945, 81-83, and especially p. 82, where the type is attributed to Karthaia.

the type with the amphora alone should be assigned to Andros or Karthaia continues to exist, and on the evidence at present available any definitive attribution would seem to be hazardous.[65]

At first sight there do not seem to be any particular difficulties about attributing the type with the amphora to Karthaia, but the very factors that suggest an attribution to Karthaia are the same ones that belie it, and vice versa. Both series, with and without the dolphin, use the same pictorial type. However, the shape of the amphora is quite different. In the series without the dolphin the amphora is more spherical, with a low neck and strong handles, and has a relatively wide base. In the series with the dolphin the amphora has a narrower body and neck, thin handles and a conical base. It gives the impression generally of a slenderer, neater vase.[66]

The incuses on the obverse of the coins without a dolphin are chiefly of the "Six-part division" type with minor variations. On the other hand, the incuses of the coins with a dolphin never have this form, but are of a more developed type. The differences in the incuses are due to the different dates of the two series and suggest an earlier date for the issues without the dolphin than for those with it. The chronological difference between the two series is also indicated by the more spherical flan of the former and its deep incuses. The flans of the series with the dolphin are thinner and broader, and the incuses are shallow. The series without the dolphin appears to be earlier not only than the second series with the dolphin but also than all the known issues of the other cities of Kea which used more evolved shapes of flans and types of incuses.

As regards the incuses, in the other two cities of Kea the same types were used for both series, with and without a dolphin, which presupposes that their issue and use were almost synchronous. At Karthaia, on the contrary, the types of the incuses of the first series never appeared in the second one.[67]

Apart from the problems of iconography and technique, another problem is presented by the large number of known staters. The ca. 30 surviving staters bespeak a flourishing mint which it seems hardly possible could have developed on Kea or any other of the small islands of the Cyclades.[68] Furthermore, the intense building activity that occurred at Karthaia at the end of the Archaic period does not seem to justify such a lavish numismatic production.[69]

65. An attribution to either Andros or Karthaia using as a criterion the types of the incuses and the form of the coins leads to no sure results, because both of them are in the Cycladic region and their mints followed the same principles.

66. For the distinctions in the types of amphora, E. Babelon, *Les origines de la monnaie à Athènes*, Athènes ^{2}1905, 33-34. Also, Th. Anagnostopoulou, *The Relation between Early Athenian Coins and Archaic Sculpture and Vase-Painting*, London University PhD, 1970, 174-176.

67. Holloway, in the ANS Summer Seminar, attempts a chronology of the coins with an amphora, attributed to Andros, based on Athenian amphora typology. According to this, the coins with an amphora and without a dolphin, would not have been minted before 550, because the type of the amphora depicted belongs to a series that appears in the Kerameikos in the decade 570-560.

68. This is indicated by K. Sheedy's study of Paros and the other Cyclades.

69. A.M. Burford, "The Economics of Greek Temple Building", *ProcCambrPhilSoc* 191, 1965, 21-34.

Any attempt to attribute the coins with an amphora but without a dolphin to Karthaia remains very doubtful, based as it is on incomplete and contradictory evidence. Removing them from Karthaia creates equally difficult problems, for two reasons: firstly because the Karthaia issues would thus appear incomplete in comparison with those of the other cities, where series with and without a dolphin were in use; secondly, it is difficult for us to accept that two neighbouring mints like those of Karthaia and Andros would choose the same iconographical type, essentially the same badge, for their cities.

For these reasons it seemed preferable to attribute, with every reservation, to Karthaia also the coins with an amphora without a dolphin.

Series I.
Obv. Amphora Rev. Incuse square **nos. 1-13 pl. 1**

Thirty-one staters have survived, of which 21 were studied and published by Seltman in his book on Athens in 1924.[70] Their condition and the shape of the amphora make it very difficult to identify the dies, about which Sheedy[71] has made some very interesting suggestions; he tried to classify them "according to shared reverse dies, but their order (of the coins) is suggested by the deterioration of one obverse die, identified through the distortion it has undergone". He accepts that the sole drachm in London also belongs to Karthaia, but some of the obols of the same type he attributes to Athens as Wappenmünzen and others to Karthaia, according to their weight.

Coins of this type were found in the hoards from Anatolia, as *IGCH* 1165 and Asyut, and one from the Cyclades,[72] which unfortunately has been lost. All hoards, however, were dated to 510-500.[73] This date is confirmed by the form of the incuses, which have a six-part division, a form also known from Aigina (530-500 BC), while the flans around the type remain quite spherical. We can therefore accept that the Karthaia mint, if the attribution to it of this type is correct, began to operate at about 510 at the latest and not before 530.

Series II.
Obv. Amphora, dolphin Rev. Incuse square **nos. 14-30 pl. 2**

The amphora is depicted in two different manners: with a slender body and high triangular foot, and with a more spherical body narrowing abruptly towards the bottom. On two of the hemidrachms the amphora body is perfectly spherical and the handles cannot be distinguished at all, while on another a small cluster of grapes is also depicted in the obverse, its reverse being

70. In his catalogue he had also included all the coins published by D. Paschalis as being from Andros, op. cit., *JIAN* I, 299-366.

71. In his thesis.

72. Greenwell, "On a Find of Archaic Greek Coins, principally of the Islands of the Aegean Sea", *NC* 1890, 15.

73. According to Price, Waggoner, *Asyut Hoard*, p. 17, these hoards belong among the earliest of the Aegean, dated to the last quarter of the 6th/beginning of the 5th c. BC.

blank, as in the case of the small denominations of the other cities. In this instance it seems that haste rather than the small size of the coin was the reason why the craftsmen did not use a die when striking the coin. The dolphin is depicted with a pronounced curvature that follows the curve of the amphora body and a prominent snout. Special emphasis is often given to the fin and eye details. The rendering of the dolphin on the Karthaia coins appears much more meticulous and developed than that on the corresponding coins of the other cities.

The incuses show the "six part division", the "Mill Sail", the "four segments" and the "St. George Cross". An example that is unique for Kea is the stater on which on the triangles formed of diagonal bands can be seen the inscription KAP(Θ).[74]

The shape of the thin broad flans and the forms of the incuses show that the date of this series is relatively later than similar ones from Koresia, but should be almost contemporary with Series II of Ioulis and corresponds to Period II on Aigina.[75] This series was continued, like those of the other cities, after 480 BC, with the inscribed coin and the incuses with small squares. The amphora frequently depicted in high relief does not seem to signify an earlier date for the issues since it appears on coins with incuses of the last phase.

Also as with the other cities, the only evidence for the chronology of the Karthaia issues is the coins themselves. The hoards offer little help because most of them contain coins of the doubtful type with the amphora but without the dolphin.[76] Only a single triobol with both amphora and dolphin comes from the Taranto find.[77] On the incuse are six irregular triangles. A first dating of the burial of the hoard was proposed by E. Babelon,[78] who placed it around 508 BC. M.J. Price and J. Waggoner have recently[79] preferred a date of around 500-490 BC. The Taranto find is not of much help in dating the Kea issues more generally, because the type of the incuse on the coin in question appears very rarely on the other coins. It does however give us a terminus ante quem for the appearance of the dolphin on the obverse type, and this is probably valid for all the cities. According to these data the dolphin must have already appeared on the Karthaia coins by at least ca. 500, and it must have been added at the same period to the iconography of the other cities.

In connection with this series an attempt has been made to attribute to Karthaia a coin from the Antilibanus hoard.[80] This is a stater depicting on the obverse an amphora from the mouth of which two small bunches of grapes sprout on either side; this is strongly reminiscent of the

74. T. Hackens, in *Guide de Délos. Les Monnaies,* Paris 1983, 109. It was an "emission exceptionelle", dating to ca. 478 BC.

75. *The Elder Turtles*, 17, 18.

76. *IGCH* 6 (Cyclades, 1880), *IGCH* 7 (Santorin, 1821).

77. *IGCH* 1874.

78. E. Babelon, "Trouvaille de Tarente", *RN* 1912, 1-40.

79. *Asyut Hoard*, 19.

80. S. Hurter, E. Pàszthory, H. Bloesch, "Archaischer Silberfund aus dem Antilibanon", *Festschrift für Leo Mildenberg*, Wetteren Belgium 1984, 124-125.

corresponding arrangement of the obverse type of one hemidrachm in Series II from Ioulis. On the reverse is a type of incuse that forms a transition between the "Union Jack" and "Mill Sail" types. This type remains unique and the attribution of the coin to Karthaia without further evidence seems questionable.

The start of Karthaia's minting activities is a problem. If the series of coins with the amphora but without the dolphin belongs to Karthaia, then it must have begun earlier than the other cities, perhaps close to the beginning of Period II at Aigina.[81] If this is not the case, the start of the mint must be dated a little later than those of the other cities. In either case, however, the small time difference between its incuses does not presuppose a significant distance in time from the Koresia and Ioulis issues, and we must assume that Karthaia began its minting activities at almost the same time as the other cities and contemporary with Periods II and III at Aigina. Its last issues seem to have continued after 480 BC. The few examples that have survived, except for the doubtful staters, indicate a small numismatic output with an irregular rate as regards the fractions, characterized by an unusually large number of staters in relation to the coins of lesser denominations.

Karthaia differs from the other cities in the iconography of its series where, although exhibiting small variations such as the addition of a bunch of grapes to the already existing type, never reaches the complete reversal as it appears at Koresia and Ioulis. Another difference can be seen in the use of the ethnic, something that is very rare in all the coinage of the Cyclades.

The very seasonable character of the Karthaia issues and the preference for large fractions were probably due to the exuberant architectural programme that the city started in the Archaic period. It would be natural at such a time that its minting operations should be chiefly directed at covering the needs of this programme and effecting large purchases, for which coins of large denominations were required.

In contrast to its rather fragmentary and irregular earlier operations, Karthaia's later numismatic output was impressive and indicates an efficient and continuous minting organization.

Series III. AR
Obv. Zeus-Aristaeus r. Rev. Sirius, KAPΘAI **nos. 31-33 pl. 2**

The historical conditions of the 4th c. BC allowed most Greek cities to resume minting in silver. Karthaia, as Ioulis, seems to have been one of them with its Series III, of which only three coins, which use the Attic weight standard, have survived.[82]

The rendering of the figure on the obverse is strongly reminiscent of the types depicted on the Ioulis silver coins. In fact, the obverse of no 33 is almost identical, if not from the same die, to no 21 of Ioulis.

81. In other words, around 540 BC according to R. Holloway, *The Elder Turtles*, 17. Or towards 530 as we stated above.

82. M.B. Wallace, "The 'Reduced Euboia-Attic' Coin Weight Standard", *Ancient Coins of the Graeco-Roman World.* The Nickle Numismatic Papers, Ontario 1984, 19-37, especially pp. 20 and 28, n. 8, in which its use at Karystos is dated between 411 and 370 BC, and at Chalkida to the third quarter of the 4th c. BC.

One other feature of the series is the great variety in the treatment of the pictorial types, something that appears very rarely in the issues of the Kean cities due perhaps to their possible commemorative character.

The flans are thin and broad, measuring 23-21 mm and weighing between 8.10 and 6.62 gr. The die axes are vertical and the die impression is carefully located in relation to the flan. In general the few coins in this series are characterized by their careful minting. On one of them can be seen the monogram AN, which probably denoted the official in charge of the mint.

The greatest wear is on the reverse, but the state of preservation of the obverses is excellent.

Series IV. AE
Obv. Amphora, dolphin downwards Rev. Bunch of grapes, l. KAP **no. 34 pl. 3**

The only surviving coin of this series most probably belongs to the 4th c. BC. Its date is chiefly based on iconographical criteria. On the obverse is a repeat of the familiar Archaic type of an amphora with a dolphin, and a cluster of grapes is depicted on the reverse, features that connect this series with the corresponding Series IV of Koresia.

The sole coin in the series weighs 2.70 gr, is 15 mm in diameter and shows great wear from use. Its uniqueness, however, prevents the any further conclusions being drawn.[83]

Series V. AE
Obv. Apollo r. Rev. Bunch of grapes, X and Φ, KAPΘA **no. 35 pl. 3**

The only surviving coin from this series is in Berlin.Its condition is relatively good; it weighs 1.42 gr and has a diameter of 12 mm.

Series VI. AE
Obv. Aristaeus r. Rev. Bunch of grapes, KAP **nos. 36-40 pl. 3**

This small series is characterized by its similarity with Series VI of Ioulis and I of the Keians and should be assigned to the same numismatic class.

Series VII. AE
Obv. Youthful ivy-crowned Dionysus r. Rev. Bunch of grapes,
in the field a star, KAPΘA **nos. 41-75 pl. 3**

This is one of the largest of the Karthaia series, with types that diverge significantly from the iconographical, Apollonian tradition of the city, of which only the star remains as an accessory symbol.

Two different issues can be discerned, according to the rendering of the grape bunch. Issue 1, where the bunch is almost circular, has few and very worn coins. Issue 2 is the standard one of the series with well established types.

83. This coin could also be associated with the series of Corfu (Corcyra), where similar types can be seen, as the specimen SNG Evelpidis 1885-1891, dated to the 4th c. BC. Nevertheless, the obverse type with the dolphin, is typical Keian and has nothing in common with the Corcyrean issues.

The rendering of the figure, like the whole iconography, is very reminiscent of Series V of Koresia.

The sizes of the flans range from 20 to 16 m, and the weights from 7.06 to 3.20 gr, with averages of 18.32 mm and 5.17 gr respectively. The die axes do not have a fixed orientation, but are chiefly vertical with fixed deviations. The technique is not always careful and the die is often off flan.[84]

Apparently the series remained in circulation for a considerable time and was supplemented by later issues. Hence alongside very worn coins we see a group of excellently preserved specimens that must have circulated towards the end of the series.

Series VIII. AE
Obv. Apollo r. Rev. Sirius KAP(ΘA) **nos. 76-154 pls. 4-6**

This series comprises the main bulk of Karthaia's minting operations during this period and establishes the characteristic iconographical type of the city, Apollo and Sirius.

Issue I can be regarded as the model followed by all the rest. Sirius faces left. Between the rays is the ethnic KAP(ΘA). A bee is depicted in the field, below Sirius.

Issue 2 is characterized by the different treatment of the figure in the obverse type and the appearance of the abbreviation ΣA on the reverse, where the position of the ethnic is also changed.

The same technical characteristics are found in both issues. The flans are thin and broad, measuring from 23 to 17 mm for the first and 24-18 mm for the second. The weights vary from 8.64 to 3.95 gr and 6.91-4.29 gr respectively. The average values are 19.38 and 19.75 mm and 6.60 and 5.56 gr (the exceptionally extreme value of 12.09 for a coin in Issue 1 is not included). The great difference in the weights is caused by heavy wear due to long use; the identical types and the closely similar dimensions rule out the possibility of different fractions.

Both issues are large for the Kea data. 39 coins from 1 and 34 from 2 have survived, produced respectively by fifteen and by five dies for the obverse types and twenty-three and nine for the reverse. Although the differences between them are not important, the manner of depicting Apollo leads us to place 2 after 1. However, a more general date at the beginning of the 3rd c. BC for 1 and in the following years of the same century for 2 seems likely.

Issue 3 preserves the same numismatic types as the preceding ones, although Sirius faces right.[85] It seems to have been a fraction of the other issues, since the coins are smaller, 17-15 mm, and lighter, 5.67-2.97 gr. Their condition is rather bad, but the damage is not only due to long use but also to bad conditions during their minting.

All three issues are distinguished by the appearance of a bee on the reverse of the coins together with the principal subject, Sirius. Although this could be interpreted as a symbol joining issues 1 to 3, it is probably also connected with the issues of the other cities, in which the bee was the principal numismatic type. In this case, it could be taken to indicate a closer link between the cities, which was usual on Kea.

84. Two more coins of this type have been found at the Athenian Agora, Kroll, *Agora*, 251, no. 833 a, b.

85. See also Kroll, *Agora*, 251, no. 834.

Issue 4 is connected to the preceding by the depiction of Sirius facing right, unlike most of the Karthaia issues. Sirius facing right appears as a countermark on one of the coins in Issue 2, which means that these coins had to be countermarked with the type of the following series, with which they were required to be equated.[86] The flans are slightly smaller than those of Issue 2, between 20 and 15 mm and weigh 9.49-3.88 gr, with averages of 18.58 mm and 5.48 gr respectively.

Sirius was also used as a reverse type on two more issues, of which only isolated examples have survived.

The treatment of the figure of the obverse type on the sole coin that constitutes Issue 5 remains unique for Kea. The treatment of Sirius in the reverse type is equally rare for Karthaia. The inscription KAPΘ leaves no room for any other identification. On both sides a dotted circle surrounds the numismatic type.

Only one coin has survived from Issue 6. The obverse die impression is off flan and it is impossible even to recognize the figure. Sirius faces left in the regular fashion, and the legend appears once only on the left.

Series IX. AE
Obv. Aristaeus r. Rev. Sirius l., KAP **nos. 155-157 pl. 7**

Of this important series, in which the ethnic of Karthaia is accompanied by the iconographical types of the Keans, unfortunately only three coins have been preserved. The obverse types are the same as those of Series II, Issues 1 and 3, of the Keans, and the same die was very probably also used for some of the coins.[87]

This series forms a connecting link between the issues of the cities and those of the League and is a strong indication that the League's mint was located at Karthaia.[88]

Series X. AE
Obv. Aristaeus r.; in a dotted circle Rev. Bee, KAPΘ; in a dotted circle **nos. 158-159 pl. 7**

Only three coins have survived, characterized by the great damage suffered by the die of the reverse type, resulting in the total obliteration of the upper half of the bee.

Series XI. AE
Obv. Aristaeus r. Rev. Eight-pointed star; between the points KAPΘA **nos. 160-173 pl. 7**

This is a series of fractions, corresponding to Series VII of Koresia and IX of Ioulis.

The flans are 15-13 mm in diameter and the weights vary between 3.70 and 1.45 gr.[89]

86. For the problem of the marking of bronze coins, see G. Le Rider, "Contremarques et surfrappes dans l'antiquité grecque", *Numismatique antique*, 27-56, and especially 37-56.

87. Karthaia 156 same obverse die as KEIΩN 27, and Karthaia 157 as KEIΩN 15.

88. See p. 49.

89. See also Kroll, *Agora*, 251, no. 835.

Karthaia's later numismatic operations follow the same rules observed in all the island mints.

The 4th c. BC is marked, as at Ioulis, by the striking of silver coins. At this period some bronze coins can also be attributed to Karthaia, like Series VI, which used the same iconographical types as VI of Ioulis and I of the Keans, but with the city's ethnic. The great activity that began at the end of the 4th c. continued with notable vigour throughout the following century. The characteristic numismatic types of the city are Apollo, who had an important cult centre at Karthaia, and Sirius, who had been introduced into the god's cult. The bee, which was most commonly used as the principle accessory symbol, was probably an indication that Karthaia was meant to appear as the religious centre of the whole island by concentrating the official cult of Apollo in the one place, as well as that of his son and the local hero Aristaeus.

The regular output and the long-term and persistent use of certain iconographical types show that the Karthaia mint not only performed a political function, but aimed at covering the financial requirements of the city and serving a wider circulation. The history of Karthaia is especially connected with the large number of pilgrims that visited the sanctuaries of the city. In the 3rd c. their number was augmented by the crews from the fleet of the Diadochi, who called at or were stationed on the island. The particularly close relations of Karthaia with the Ptolemies brought further important business to the city. In this atmosphere, which was relatively cosmopolitan for the time, Karthaia found it advisable to mint coins with set types that would serve as propaganda for the city and replace those brought with them by the pilgrims. Unfortunately excavations have brought to light few coins, particularly of the Kean cities, and we therefore do not know for certain the nationalities and origins of the visitors to the sanctuaries. Nor have enough coins of the city been found outside of Kea, to give us a picture of their wider distribution.

Karthaia's numismatic series are characterized on the whole by their regularity, not only in the way pictorial types are repeated, but in the shape and size of the flans. The issues are generally carefully produced; the dies are very rarely off flan and the technique is maintained at a constant level, as is the artistic quality. The series remained in circulation for a considerable space of time and were frequently renewed with fresh issues, always with the same types, even when they were only going to circulate for a short period.

THE KOINON OF KEANS

The coexistence of four cities within the limited confines of the island, the common ethnic and religious sentiments and the need for a united confrontation of external problems were all factors favouring a common organization of the cities.[90]

90. G. Ténékidès, *La notion juridique de l'indépendence et la tradition hellénique. Autonomie et fédéralisme aux Ve et IVe s. av. J.C.* Collection de l'Institut Français d'Athènes, 1954, 45-46. O. Picard, *Chalcis et la confédératrion eubéenne. Étude de numismatique et d'histoire (IVe-Ier s.)*, Athènes 1979, 221, n. 4. J. Ducat, "La confédération béotienne et l'expansion thébaine à l'époque archaïque", *BCH* 97, 1973, 60-61.

For the Archaic period there is insufficient evidence, on which to base a solid conclusion. For this period,therefore, the hypothetical existence of such a political movement is founded solely on iconographical criteria, namely the addition during the last decade of the 6th c. BC of the common symbol of the dolphin on the obverse of all the series. Nevertheless, although such an interpretation of the numismatic types may be thought overbold, even for the Archaic period, when the role of the iconography was decisive, one cannot reject the possibility of a common organization of the cities at the end of the 6th or beginning of the 5th c., more particularly when one takes into account the situation created by Kea joining the Athenian League.[91]

The existence of a "synteleia" for the payment of the tribute due to the League has already been noted.[92] Recently P. Brun[93] has suggested that in the 5th c. BC there was an earlier association of the cities that was national in character, which was transformed in 454 BC into a confederation. However, the political form of this union,[94] which was apparently dissolved by 377 when the cities of Kea enrolled individually in the Second Athenian League,[95] is unknown.

The situation in the 4th c. BC remains fluid.[96] On the Sandwich Marble of 377-373 the Keans make a general appearance, and in 368 the autonomy of the Greek cities was confirmed at the Synedrion of Delphi.[97] To this century also date the famous decrees of civil rights equality with Eretria in 390-340, and Istiaea in 364 BC, in which not only are the Keans mentioned as a group, but also their common institutions.[98] These two sources are the chief evidence for the existence of a League of the cities in the 4th c. BC.

In terms of coinage this political situation is corroborated by the minting of the silver issues of the cities, as well as by the series of bronze coins which on both stylistic grounds and the appearance of the coins (size, technique) could be dated to the end of the 4th or beginning of the 3rd c. BC.[99]

91. P. Cloché, *La politique étrangère d'Athènes de 404 à 438 av. J.C.*, Paris 1934; R. Osborne, *The Classical Landscape with Figures*, London 1987, 132.

92. B.D. Meritt, H.D. Wade-Gery, M.F. McGregor, *The Athenian Tribute Lists*, Cambridge, Mass, 1939.

93. P. Brun, "L'île de Keos et ses cités au IVe s. av. J.C.", *ZPE* 76, 1989, 130.

94. For further parallels, see P. Salmon, "Droits et devoirs des cités dans la confédération béotienne (447/6-386)", *La Béotie antique*, Paris 1985, 301-306.

95. J. Cargill, *The Second Athenian League*, Berkeley, Los Angeles, London 1981, 189.

96. For all the relevant questions, see the very interesting article by P. Brun, op. cit., *ZPE* 76, 1989, 121-138 .

97. D.M. Robinson, *A Hoard of Silver Coins from Carystus, NNM* 124, 1952. In the same century in ca. 350 BC a similar policy was proclaimed by Mausolus, see S. Hornblower, *Mausolus*, Oxford, 1982, 206.

98. D.M. Lewis, "The Federal Constitution of Keos", *BSA* 57, 1962, 1-4; Ch. Dunant, J. Thomopoulos, "Inscriptions de Céos", *BCH* 78, 1954, 316-348.

99. M.J. Price, *The Introduction of Bronze Coinage and its Particular Development at Corinth*, Cambridge University PhD.

Series I. AE
Obv. Aristaeus r. Rev. Bunch of grapes, KEI **nos. 1-12 pl. 1**

Series I is characterized by the total difference of the coin types from the other issues of the Keans, although these same types are found repeated in the Series VI from Ioulis and Karthaia. The only difference between I and them is the legend KEI. The use of the same dies for the issues of the cities and the Keans is difficult to verify with certainty, because the small size of the coins and the bad positioning of the type on the flan makes any identification unsure.

The coins are small in size with diameters of 12-10 mm and low weights of 2.10-1.11 gr, with averages of 11 mm and 1.70 gr respectively. The die axes do not have a particular orientation. On the 15 known examples, eleven dies can with considerable reservations, be identified for the obverse and nine for the reverse sides.

The rendering of the figure in the obverse type follows the models that appeared on the silver coins of Series IV.2 from Ioulis and III from Karthaia. For this reason Series I of the Keans should also be dated to the end of the 4th c. BC.[100] and regarded as the numismatic expression of the same policy that determined the issue of the corresponding series of Ioulis and Karthaia.

It is interesting that on the Karthaia issues only the abbreviated ethnic KAP is used, while in the case of Ioulis we read IOY KE. We can thus perceive the following scheme, comprising a common iconographical type together with: the ethnic of the city, the ethnic of the city and the island, or the ethnic of the island.

It was therefore a series that was struck contemporaneously or almost contemporaneously with the corresponding series of the cities, and the only difference lay in the use of the ethnic. This being the case, if a sequence exists, then the Karthaia issues should come at the beginning, followed by those of Ioulis and finally those of KEIΩN.

The significance of the inscription IOY KE must be that at some point towards the end of the 4th c. BC Ioulis decided to propagandize, or else had acquired a sense of wider ethnic identity in regard to the island. The next immediate step was to eliminate any other ethnic except for KEIΩN. We must also not forget the problematical and rare series of silver coins pointing to the existence of a very complete system of minting operations on Kea for a brief period in the 4th c. BC.

The consolidation of the cities into a League at this time is linked to the defection of the Keans from the Athenian hegemony and incitement by the Euboean cities, particularly Eretria, most probably under the leadership of Ioulis.[101] In this case Ioulis used the common god of the Keans, Aristaeus, as a symbol on the coins of the new administration, while preserving its own badge, a bunch of grapes, on the reverse. In a first phase it advertised its own leading role vis-a'-vis the other cities with the inscription IOY KE, and in the next phase it struck coins only in the name of the Keans.

100. For the whole question of the use of bronze coins in the 4th c. BC, see M.J. Price, "Early Greek Bronge Coinage", *Essays Presented to Stanley Robinson*, Oxford 1968, 92-93. His views, like many of those put forward in his thesis, are followed by Anne Jackson, for the dating of coins of Crete, "The Bronze Coinage of Gortyn", *NC* 1971, 37-51 and "The Chronology of the Bronze Coins of Knossos", *BSA* 66, 1971, 283-295.

101. J. Buckler, *The Theban Hegemony*, 371-362 BC, Cambridge, Mass., London, 1980, 173.

Karthaia, which probably started out by participating in this integrated, anti-Athenian movement, used the same iconographical types, but probably did not go as far as Ioulis; this is apparent from the epigraphical evidence, which indicates that the Karthaians remained apart from the other Keans in their attitude towards Athens and preserved their own ethnic. The repression of the uprising by the Athenians also signalled the compulsory «πολιτεύεσθαι κατὰ πόλεις»,[102] as well as the imposition of other oppressive measures.

Series II. AE
Obv. Aristaeus Rev. Sirius KEI(ΩN) **nos. 13-139 pls. 1-4**

Series II was the chief fraction used by the League. It is divided into many issues which differed mainly in the treatment of the obverse type. The treatment of Sirius on the reverse leaves little room for much deviation and most of the differences are limited to the ways of arranging the inscription.

Issue 1 is characterized by its similarities to Series IX of Karthaia. Apart from the use of common dies for the obverse,[103] the inscription in the obverse type is also laid out in the same way. The dies are smaller than the flans and in most cases are off flan to the left.

The rendering of Aristaeus does not appreciably change and forms a continuity. The same manner of writing the ethnic, KEI(ΩN) is adhered to, and the shortened form K EI is also added. The weights vary between 5.24 and 3.35 gr, while the diameters range from 19 to 14 mm.

Issue 2 also shares common die impressions with Series IX of Karthaia.[104]

It seems that Issues 1 and 2, very close, in different ways, to Karthaia's last issue, circulated together with its Series IX and they covered a part of the currency circulation of the island.

Issue 3 breaks the connections to Karthaia's types. From there on different changes can be observed in the treatment of the types.

Issue 4 is distinguished by a totally different approach in its rendering of types, which diverges markedly from the more idealized style seen in the other series. One can detect in it the hand of an individual engraver, who does not appear to have worked at any other time in the mint of the Keans.

Issue 5 shows once again a more elaborate type of Aristaeus, while the dog-Sirius looks more close to nature than in the previous series.

Issue 6 shows at least two different styles in the rendering of the obverse type.

Issue 7 includes some of the most worn specimen of all the series, while, in the same time, an artistic deterioration and haste in the writing of the legend is evident in the reverse dies.

Issue 8 is unique in that the figure faces left and there is the monogram Ɛ.

102. *IG* II, 2, 404.
103. Cat. no. 15 with Karthaia 157.
104. Cat. no. 27 with Karthaia 155, 156.

Issue 9 remains unique in its depiction of Aristaeus with radiate hair, no doubt a reference to his solar hypostasis.[105]

On the coins of Issue 10 the rendering of Aristaeus differs significantly from that on the other issues.

The style of the portrayal of Aristaeus on the coins of Issue 11 is completely alien to Kea; it is probably the work of a particular engraver, who did not work on any other series.

All the issues in Series II constitute one and the same fraction and share common technical features. The flans are thin and broad, most of them with a hollow in the reverse caused by the pressure of the punch die. Their sizes range from 18 to 13 mm. The die impressions are generally located correctly on the flans, except for certain issues, where the types are off flan to the left. The die axes are vertical with only slight deviations. The representative weights of the coins vary between 5.20 and 3.00 gr.

Series III. AE
Obv. Aristaeus r. Rev. Eight-pointed star; between the points KEI nos. 140-150 pl. 4

This series, probably a fraction of the previous one, (diam. 15-12 mm, weight 2.98-1.40 gr) is distinguished by the repetition of the iconographical types that were used in the issues of the cities.[106]

As in the first phase of the minting of the Koinon, in Series II also, iconographical types in common with those of the cities were used. In some cases, indeed, the obverse type dies are identified with Karthaian dies. We must therefore suppose that for a brief period the Keans were minting at the same time as the cities, or at least as the one city, Karthaia, and that afterwards they continued on their own for about a century, replacing the output of the cities.

It is difficult to reconstruct the time frame of these issues. Stylistic criteria, although they represent an aesthetic trend over a wider chronological period, are not enough to supply a concrete chronology nor do they represent any actual development. The identifications of the dies, which usually form the basis of such classifications, offer little assistance. For these particular issues, which in practice may be regarded as indistinct, the dies used for one were rarely used for another, with the result that they do not help in classifying the coins, since the identification of the dies is confined to each issue only.

105. For very close parallels, useful for the dating, see SNG Evelpidis, Thessalie, Illyrie, Corcyre, 1777-1781, coins of Ambracia of the late 3rd to 168 BC. It is also very tempting, on the strength of this issue and the radiate head of Aristeaus, to postulate a Rhodian influence towards the end of the 2nd. c. BC and an imitation of the Rhodian head of Helios in profile.

106. Series VII of Koresia, IX of Ioulis, see especially no. 148 with nos. 80, 81 of Ioulis and XI of Karthaia.

The archaeological facts are also of little help in dating the series. Although the coins of this period constitute the majority of the coins found, they are generally either surface finds or from disturbed excavation levels. One coin (cat. no. 22c) was found by P. Graindor in excavations close to the Archaic temple of Athena at Karthaia. The relevant publication, however, gives no other evidence for the date of the levels in which it was found.[107] At Ayia Eirini coins of the League usually come from the upper disturbed levels and cannot be securely dated. It may be noted, however, that one of them (cat. no. 23a) was found above the level from which a coin of Cassandrus (316-297 BC) came. Outside the island of Kea a coin of the Keans was found on Tinos, at the sanctuary of Poseidon, in levels dating to the 2nd/1st c. BC.[108] Another one was found in excavations at the Athens Agora in the fill of the southernmost section of the drain south of the Roman bath, which was destroyed at the end of the 2nd or beginning of the 1st c. BC. The material from the drain as a whole dates to the first half of the 2nd c. or slightly earlier,[109] while seven more come from the same region.[110] Although the slim excavation evidence does not allow absolute dating with much certainty compared with the parallel series of other mints, one can support a date for their striking in the 2nd c. BC.

The historical evidence for this date is contradictory.[111] The existence of a League of the cities is attested with relative certainty by 3rd c. BC sources. To this period date the decrees of sympoliteia with the Aetolian Confederacy in 240 and Naupactus in 220, in which the Keans are mentioned as a single entity, and where equal mention is made of the cities, the Boule and the Demos of the Keans, while a «πολιτεία ἐν Κέωι» is also given. On the other hand, in an inscription from Magnesia ad Maeandrum (207/206) the cities are named individually;[112] nor must we forget that in 217 BC Philip V had already proclaimed the independence of the cities from the Aetolian Confederacy and their autonomy, dissolving whatever League or Confederacy had been formed.[113] The existence, then, of such a political organization can be confirmed with some certainty for only a short period of time, namely for three years, during the second half of the 3rd c. BC.

After this plethora of decrees from the Kean cities in the 3rd c. BC, the 2nd century is marked by a sudden and striking decrease in the testimony. Most of the few 2nd century inscriptions are funerary or dedicatory. This fact is curious, especially when we consider that just at this time the synoecismus of the cities was taking place, and one would therefore have expected greater mobility, especially from Ioulis and Karthaia.

107. P. Graindor, "Fouille de Karthaia (Ile de Kéos)", *BCH* 29, 1905, 351-352.

108. *Ténos* I. 1. 2, 1984, Inv. 65, GI 21, 76354.

109. R. S. Kleiner, "The Agora Excavations and Athenian Bronze Coinage 200-86 BC", *Hesperia* 45, 1976, 15. 19. Deposit A-B 19-20: 1 NN-1612.

110. Kroll, *Agora*, 251, nos. 831-832.

111. Ch. Papageorgiadou-Banis, "A Koinon of the Keians? The Numismatic Evidence", *RBN* 139, 1993, 9-16.

112. O. Kern, *Inschriften von Magnesia*, 50 = *SIG* 3, 562.

113. W. Thompson, "Philip V and the Islanders", *TAPhA* 102, 1971, 615-620.

We therefore have to fall back on the archaeological evidence to throw some light on the situation. If we accept a 3rd century date for the coins, contemporary with the issues of the cities, two serious practical problems arise:

1. The great mass of coins crammed into the 3rd century in numbers that seem excessive for the needs of the island, whatever the historical and economic conditions may have been.

2. The large gap in coin production in the 2nd c. BC, to which no series can be assigned. Taken together with the total absence of inscriptions from the cities at this time, we can only suppose that there was some sort of suspension of political proceedings and a very grave crisis. This is not apparent, however, either from the general historical conditions prevailing in the Aegean or from the literary sources that mention the island itself.

On the other hand a 2nd century chronology eliminates this problem and accords with the slight archaeological evidence that is available.

The conclusion from the epigraphical testimony is that the cities of Kea appeared and functioned as one political body in the 4th c. BC. Their opportunities to organize, however, were few and related to their fleeting attempts to break away from the Athenian League. This meant that the formation of a League of the cities was a gesture of national independence, something that could be manifested by the minting of coins, and during its brief spells of existence it managed to produce small numismatic series. To this period may also be assigned the series of Ioulis and Karthaia that constituted a first step before Issue I of the Keans.

The cities apparently continued to maintain their independence within the framework of a common organization, and thus, while using common iconographical types, they also retained their own ethnics. This phase evidently did not last long, for Kean issues appeared with the same types but with the inscription KEI. We may assume that the series of the cities and of the Keans were virtually synchronous, and that of the four cities only Ioulis and Karthaia had joined the League. At this time Koresia appeared with its own independent production, although its Series I also used the bunch of grapes as a reverse type. It is impossible to tell from the numismatic evidence whether there existed in this period a strong League exercising significant authority over the whole island. It is easier to envisualise it as a common organization of the cities on an "ethnic" level whose aim was to achieve independence from the Athenian League. This is the interpretation given to the fact that these were limited series of small denominations, an indication that their circulation complemented the cities' wider minting activities. This would also explain the striking of such an insignificant series, since it should properly have performed the function of projecting the League's numismatic image. The centre of the movement for the unification of the cities appears to have been Ioulis, which was also the centre of the anti-Athenian movements in the 4th c. BC. This supposition is supported by the adoption as the emblem of the Kean coinage of the bunch of grapes, the badge that had been the particular characteristic of Ioulis ever since the Archaic period.

In contrast to the situation that had prevailed in the 4th c., the League of Keans when it reappeared this time in the 2nd c. BC displayed great numismatic activity, although epigraphical and literary evidence is as wanting now as in the previous period. There is mention by ancient writers of a synoecismus between Ioulis and Koresia. Strabo's information goes back to the 1st c. BC, but it appears to reflect earlier events. The synoecismus between Karthaia and Poiessa

is placed in the 3rd c. BC and the one between Ioulis and Koresia a little later, but this does not of course explain the Keans' minting activity. We therefore suggest that at some point it was enlarged into a common political organization that included at least the two remaining cities, in line with the models of their previous organization. This time the centre was transferred to Karthaia, who could carry on a leading policy within the framework of a common organization of the cities of the island. The strong presence of Karthaia is also confirmed by the use of Sirius, the city's chief numismatic type, as the emblem of the League's series. The dual character of its coinage is further shown by the use of the same dies for both the city and the League.

We are ignorant of the form of government and the chronology of the League's second phase. One thing is certain, that its first series belong to the latter years of the operations of the cities' mints, at the end of the 3rd c. BC. After a brief period of probably synchronous operation, the cities' mints halted production, and throughout the 2nd c. only the series of the League were continued. The undertaking of the island's minting operations by the League probably means that it had become the overall political authority into which the cities were assimilated.[114]

IMPERIAL PERIOD

AE
Obv. Augustus, ΣΕΒΑΣΤΟΣ Rev. Apollo Kitharodos, ΚΕΙΩΝ **no. 151 pl. 4**

The inscription ΚΕΙΩΝ appears on yet another coin, from the Imperial period, and it is also the only coin of this period coming from Kea[115]. The obverse carries a portrait of Augustus and the inscription ΣΕΒΑΣΤΟΣ, and on the reverse are Apollo Kitharodos and the ethnic.[116] The uniqueness of the coin and the rarity of corresponding issues from the other Cycladic islands raise many

114. For a different chronology in the 3rd c. BC, see G. Reger, M. Risser, "Coinage and Federation on Hellenistic Keos", in *Landscape Archaeology*, 305-315, where an attempt is also made to determine the regime that governed the island. However, the numismatic finds are not sufficiently utilized. All the coins of the Keans come from levels dating to the 2nd c. BC, a date taken by the writers to be a terminus ante quem for the chronology of the issues of the ΚΕΙΩΝ. Against this are the following arguments:

1. in a period of 100 years it is not necessary to go back to the previous century, since the coins in question could equally have been struck and have circulated at some point in the 2nd c. BC.

2. It is very probable that these coins had reached other regions at the same time that they were in circulation on Kea. They were small bronze coins intended for local use and had been carried further afield by some voyager who had used them while he was on Kea. They were not coins of great value hoarded for reasons of security that could have remained undisturbed for a long time, for in that case they might well have been minted many years before.

3. Moreover the 3rd c. BC, the time of the Ptolemaic domination of the island and of the general upheavals in the Aegean that accompanied the rise of monarchical and totalitarian forces, would not seem to have been ideal for political movements of this kind. On the other hand the emergence in the next century of Rhodes as a power interested in a purely commercial influence would have been more favourable to a contraction into more easily manageable units. A more general prospering of the Cycladic mints can also be observed at this time, with allusions to Rhodian emblems, as for instance Kythnos.

115. J.C. Christiansen, "A Unique Bronze Coin of Augustus from the Island of Keos in the Cyclades", *NC*, April 1993, 76.

116. Cat. no. 151. For the connection of Augustus with Apollo in relation to his policy, see J.A.O. Larsen, "The Policy of Augustus in Greece", *Acta Classica* I, 1958, 123-130.

problems about its attribution and date.[117] If it does in fact belong to Kea, then it must have been minted in around 22/21 BC, at which time Augustus, in a change in policy for reasons that are unclear, detached Eretria and Aigina from the control of Athens.[118] Although it is not known whether Kea was among the possessions of Athens to which autonomy was restored, such an occasion would have been an excellent opportunity to strike a small commemorative series of coins on which Augustus was depicted as a liberator.

ERRONEOUS ATTRIBUTIONS AND FORGERIES

The relatively small number of coins from Kea and their small range, as well as the presence of inscriptions on most of them, made their identification and attribution comparatively easy. Since Bröndsted's first publication most of the types he illustrated have received general acceptance up to the present, with very few exceptions. The Archaic coins with two horizontally disposed dolphins that were later attributed to Thera,[119] and another one with an oinochoe and a regular incuse,[120] he considered, not certainly but very probably, as coming from Kea. From the later periods he illustrates a coin with Sirius on both sides, which is very like the type with the stars on both sides.

Following Bröndsted's distinctions, Svoronos retained his basic attributions but proposed some different ones, such as the type with the grapes, for example, which he attributed to Kea generally and to Karthaia in particular. In the plates in his archives in the Numismatic Museum[121] he attributed to Kea the coins with an amphora, a bunch of grapes, two bunches of grapes hanging from the same branch[122] and a turtle, which he probably thought was an amphora. He also attributed the amphora and bunch of grapes to Karthaia, to which he also considered a small coin belonged, published by Sestini, with an incuse with diagonal bands on both sides. He attributed the two dolphins to Koresia and a coin with a bee and incuse to Ioulis.[123] For the later periods he followed

117. *FITA*, 354.

118. G.W. Bowersock, *Augustus and the Greek World*, Oxford 1956, 105-108.

119. *Voyages*, 63, n. 1 and 127, pl. XXVIII. According to Bröndsted, in whose collection this coin was, it was indeed found on Kea, but he had reservations about its real attribution. Cousinery had found a similar piece on the island, but this was not enough to persuade Bröndsted that it belonged to a local mint. For the attribution of the type, see S. Boutin, "Essai de classement de monnaies archaïques de la mer égée au type des deux daulphins", *IAPN* 8, 1986, 1-10, where all the earlier views and a bibliography are given.

120. *ACGC*, 49, pl. 6, 124, where it is thought to belong to Milos.

121. They were donated to the Museum by his granddaughter, the archaeologist Vana Hadzimichali.

122. A. von Prokesch Osten, *Inedita meiner Sammlung autonomer altgriechischer Münzen*, Wien 1859, 279, pl. III, 108; E. de Cadalvène, *Recueil de médailles de peuples et de villes I*, Paris 1828, 231, pl. III, 29. For the attribution of the type, see A. de Longperier, "Monnaies de Sérapéum de Memphis. Trouvaille de Myt-Rahineh", RN 1861, 418, where it was ascribed to Eretria, and recently, M.J. Price, *CH* III, 42, no. 18, "uncertain Aegean island".

123. A. de Longperier, op. cit. *RN* 1861, 419, and M.J. Price, *CH* III, 42: "uncertain Ephesus".

Dumersan in attributing to Kea a coin with the inscription ΚΕΤΡΙΠΟΡΙΟΣ, which the latter interpreted as referring to Kea with the three harbours.[124] To Koresia he ascribed a coin that had been published by Cadalvène[125] showing a female head with a helmet and a star with the inscription ΚΟΡΗ Ο. This was probably a misunderstanding of the figure of the obverse type.

Svoronos' more clear-cut and circumstantial opinions were reflected in the Plates republished by Psyllas in his History of Kea.[126] In these, Archaic coins in general are not attributed to Kea, Karthaia is left only with the type with amphora and dolphin, the two dolphins are totally removed, and of the types with a bunch of grapes, only those are retained that have the triangular form and were attributed to Ioulis. From the later issues, the coin with ΚΕΤΡΙΠΟΡΙΟΣ is not included, and the typology of the issues of the cities and of the Keans was used up. In the case of Poiessa, coins of every period were ascribed to it.

Koresia was also credited with a coin with the figure of Rome on the obverse and a bee with the inscription ΚΟΡΗΣΙΑ on the reverse,[127] but this was probably due to an erroneous reading of the ethnic and the coin cannot be considered as evidence of the continuation of the Koresian mint into the Roman period.

Earlier scholars also attributed various coins to the fourth city, Poiessa, but these too have been shown to be were faulty identifications and in the later publications no coins are attributed to this city.

The first person to identify a coin with the inscription ΠΟ on the reverse was Bröndsted, but it has been impossible to track down this coin in any museum. It was very likely a coin of Ioulis of the type Aristaeus/bunch of grapes on which the inscription ΙΟΥ was read as ΠΟ. Later on, Svoronos, although he had not included Poiessa in the Plate found in the Athens Numismatic Museum, attributed to it coins from every period in the Plates illustrating Psyllas' monograph. He considered as an Archaic issue of the city the coin with a bee from the Myt Rahineh find,[128] which in his first comments he had ascribed to Ioulis. He considered two coins to be later issues of the city: the first with Dionysus and a bunch of grapes,[129] and the second with Apollo or Dionysus and Dionysus enthroned. On neither coin, however, can any legend be distinguished that would justify their attribution to Poiessa. No later scholar has followed these attributions, and for the present, at least, we have to admit that we cannot identify any coins minted by that city. Probably unknown historical circumstances prevented Poiessa from striking its own coins during the phases that have been observed in the minting of the other cities, or else the city struck only a

124. M. Dumersan, *Description des médailles antiques de cabinet de Feu M. Allier de Hauteroche*, Paris 1829.

125. E. de Cadalvène, op. cit., 3182.

126. I.N. Psyllas, *Ἱστορία τῆς νήσου Κέας*, Athens 1920.

127. D. Sestini, *Descrizione delle medaglie antiche greche del Museo Hedervariano*, Firenze 1830, 168, no. 5; L. Müller, *Numismatique de l'ancienne Afrique, 1er Vol. Les Monnaies de la Cyrenaïque*, Copenhagen 1860, 29; A. Duchalais, "Monnaies de Cyrène au type de l'abeille", *RN* 1852, 338-339.

128. A. de Longperier, op. cit. *RN* 1861, 418.

129. Which in fact is one of the coins of our series XV from Ioulis; Cat. no. 164a.

very few coins which have not yet been found or identified. We could suggest reasons similar to those cited by P. Graindor[130] for the synoecismus of the cities. According to him, the economic crisis that was apparent everywhere in the Cyclades during the 4th/3rd c. BC undoubtedly also affected Kea, and especially Poiessa, which never succeeded in overcoming it. The result of the economic decline was that it ceased to exist, at least politically, in the second half of the 3rd c. BC. The finds from the district, however, indicate no such financial crisis, and in the rest of the Cyclades the 4th/3rd c. was rather a period of prosperity than of economic decline, as Graindor maintained. The reasons for the lack of minting activity at Poiessa must therefore be sought elsewhere.

The prestige of the Karthaia mint, which may be due in part to the periodical excavations that kept the interest of the antiquarians alive, seems to have also been reflected in later periods. Two silver coins of Karthaia, a stater and a drachm, Classical in style, were counterfeited by Christodoulos.[131] Although the pictorial types of both of them have no parallels on the island and are unique for Karthaia, the inscription KAPΘA was enough of itself to convince the dealers and collectors. One of these coins belonged to the collection of an archaeologist and was bought by Hirsch in 1905, with indeed a note that it had been found on Kea in 1885 together with another coin in the same collection.[132]

From the study of the coins kept in the museums, it seems that some of them must also be rejected.[133]

The specimen from Koressia in Berlin is strange enough. As Dr Sheedy pointed out to me the specimen from Berlin, without a dolphin, which I consider as a fake, was executed by the same hand as the coins, showing the dolphin, now in the American Numismatic Society. This would seem to strengthen the hypothesis that the Berlin specimen is a very good copy of the original one, from which the dolphin was simply ommitted.

Almost the same situation is repeated with two silver coins from Ioulis, of the classical period, depicting Aristaeus and a bee. The two specimens, from Paris and Boston, were struck from the same obverse and reverse dies. Nevertheless, the Paris coin, still remains doubtful and the same must be true of the Boston coin.

130. P. Graindor, "Kykladika", *MB* 25, 1921, 120-125.

131. J.N. Svoronos, *Synopsis de mille coins faux du faussaire C. Christodoulos*, Athènes 1922, 33, pl. M. 395 B, 396.

132. Hirsch, 15/5/1905, No. XIII. "Catalog einer hochbedentenden Sammlung griechischer Münzen aus dem Nachlasse eines bekannten Archäologen", 186, no. 3128, Pl. XXXV.

133.They are mentioned in the Catalogue at the end of each mint as "doubtful".

CHAPTER 4

GENERAL CHARACTERISTICS AND CHRONOLOGY

The Archaic coinage over a large part of Greece and particularly the Cyclades was influenced by the Aiginetic weight standard, which was due to the island's remarkable economic growth and the wide diffusion of her coinage.[1] Aigina's influence on Kea is apparent in every sector, from its advanced techniques and pictorial treatment to the organization of its financial system. The mints on the Cycladic Islands appear to have been largely subsidiary to the Aiginetic in this area.[2] This is why, apart from the metric system, they also followed the typological features of the Aiginetic coins, not only retaining the same form of the stater but also using pictorial types that imitated the turtles.[3]

It has not yet been fully established exactly when and where in southern Greece the use of coins began as a means of exchange,[4] but the neighbouring islands were not slow to follow its example, and by the end of the 6th c. a flourishing coinage had appeared in all the Cycladic islands.[5] The earliest issues on Kea consist largely of staters, while in the later phases smaller denominations appeared which became more numerous towards the end of the Archaic period, when there was an increased use of coins for everyday transactions.[6]

The use of coins of high denominations is associated with the island's heyday in the Archaic period and its grandiose architectural programmes and the growth of shipping. Two of the cities, Karthaia and Koresia, were key points on the shipping routes: the first, where considerable remains of buildings have survived, was an important stopover on the routes to the Cyclades, and the second, which faces Lavrion, was important for maritime transport and trade with the mainland. With the influx of foreign coins, both cities acquired the necessary metal to mint their own coinage,[7] since Kea itself did not possess sufficient silver to cover its needs. This also made

1. *ACGC*, 44.

2. *ACGC*, 45.

3. C.H.V. Sutherland, "Overstrikes and Hoards. The Movement of Greek Coinage down to 400 BC", *NC* 1942, 12, n. 11, considered that even the spherical shape itself of the first coins of Karthaia, as well as others outside of the Cyclades, had been chosen not only for their similarity to the Aigina ones, but also because it facilitated the restriking of the spherical "turtles".

4. *The Elder Turtles*, 30. *Asyut Hoard*, 123, 124, where it is maintained that the beginning of coinage in Greece should be placed at Corinth in the second half of the 6th c. BC.

5. B.F. Holle, *Historical Considerations on the Origins and the Spread of Greek Coinage in the Archaic Age*, Michigan University PhD, 1978, 49-51, and p. 56, where she points out that, unlike the Greek cities on the coast of Asia Minor, which chiefly minted small fractions and based their economies on the coinage of the Eastern dynasties with its large denominations, the Cyclades started out by minting chiefly large fractions.

6. C.M. Kraay, "Hoards, Small Change and the Origin of Coinage", *JHS* 1964, 85-91. M.J. Price, *Early Greek Bronze Coinage. Essays Presented to Stanley Robinson*, Oxford 1968, 92.

7. Most of the overstruck coins of Kea come from Koresia. Probably because of the increased foreign business due to its geographical position, the whole process of utilizing the metal from the foreign coins was carried on in a hurry and with more slipshod results.

numismatic production independent of the actual wealth of the city, an important factor for the future development of the mint.[8]

The minting activities of the cities were marked by the timeliness of their production, which began when there was a real need.[9] The establishment and operation of a permanent mint required a very large outlay, and this was difficult for the small cities in the Cyclades to achieve.[10] In addition, their financial needs did not necessiate large numbers of coins and were adequately met by the circulation of the coins of other cities, especially Aigina. Nevertheless, that the mints of the Kean cities were productive is apparent from the fact that most of the surviving coins come from different dies.[11]

In spite of the differences noted between them, the three cities began minting coins at almost the same time. Their issues are distinguished by the use of dies that expanded the surface around the incuse; these came into use in the last quarter of the 6th c. BC.[12] The incuses are characterized by the synchronous use of the "Union Jack", "Mill Sail" and "Staggered Triangles", dating to the end of the Archaic period.[13] The Persian Wars do not seem to have interrupted their minting activities, although the incuses that appear in this phase were influenced less and less by Aigina and, like the other Cycladic islands, more by Athens. This was natural once the centre of power had shifted and Athens assumed the leading role in Greece.[14] The incuses with wider or narrower diagonal bands, and those with small shallow squares, which now began to appear, date to the early years of the Classical period.

Unfortunately there are no excavation finds or hoards that might provide a more positive date, and even the Aigina chronology has undergone revisions that often vary considerably[15] and therefore cannot be taken as a secure point of reference for the Kea issues. The beginning of the Kea mints can be dated in a general way to the last quarter of the 6th c. BC, and they continued

8. B.F. Holle, *Historical Considerations on the Origins and the Spread of Greek Coinage in the Archaic Age*, Michigan University PhD, 1978, 51. H. Montgomery, "Silver, Coins and the Wealth of a City-State", *OpAth* 15, 10, 1984, 123-133.

9. Minting activity of this kind is distinguished by the defective series or rare combinations and repetitions of die impressions, and generally by the absence of connecting marks between the issues.

10. C.M. Kraay, "Greek Coinage and War", *Ancient Coins of the Graeco-Roman World*, The Nickle Numismatic Papers, Ontario 1984, 5.

11. *The Elder Turtles*, 26. For the corresponding production of Aigina, Corinth and Athens, loc. cit., 42. For the numbers of coins that could be produced by each die different estimates have been made. See for example D.G. Sellwood, "Some Experiments in Greek Minting Technique", *NC* 1963, 217-231, and G.F. Carter, "Comparison of Methods for Calculating the Total Number of Dies from Die-Link Statistics", *Statistique et Numismatique, PACT* 5, 204-213.

12. *The Elder Turtles*, 39; *Asyut Hoard*, 75, where this technique is dated with greater precision to around 510 BC.

13. Aigina, Phases II and III. *The Elder Turtles*, 17-18. The "Staggered Triangles" appear to constitute the transition from the "Five Triangles" type to the early form of the "skew".

14. For the prevailing numismatic situation in the Cyclades, see Kraay, *ACGC* 48.

15. Holloway himself, *The Elder Turtles*, 30, suggested as a chronology for the issues of Phase I the years before 540 BC. Later, however, "An Archaic Hoard from Crete and the Early Aeginetan Coinage", *MN* 17, 1971, 1-21, he moved the beginning of the Aigina coinage back to 580 BC. Recently, *Asyut Hoard*, 76, the authors returned to 550. See also H. Nicolet, S. Gjongecaj, "Le monnayage d' argent d'Égine et le trésor de Hollm (Albanie) 1991", *BCH* 119, 1995, 283-332, where a general redating of the Aigina coinage is given.

until after 480 BC. Two phases can be distinguished, before and after the Persian Wars, which differ in two basic respects: the incuses and the fractions. The change in the balance of power in the Aegean after the Persian Wars can be seen in the different influences, which in this case take the form of a change in the shape of the incuses. In the second phase the incuses of the Kea coins have great similarities with those of the other cycladic islands.[16] The second feature of this phase is the changeover to minting coins of essentially small fractions, whose number increased significantly in all the cities and was clearly connected with the new ideas about the use of coins that began in the 5th c. BC,[17] as well as with the dominant position of the Athenian currency.

The Archaic coinage on Kea was also distinguished by the use of two different pictorial types. In each city there was a group of coins that bore only its badge on the obverse, and a second, and larger, group in which a dolphin was also depicted. Both the dating and significance of this badge are unsure. The existence of a small coin of Karthaia with an amphora and a dolphin in the Taranto hoard is perhaps the only indication of the date of the appearance of the dolphin on the Kea coinage. A date for the burial of the hoard towards 508 BC, or the more recent estimate towards 500-490,[18] gives a terminus ante quem for its appearance on the coins of the cities of Kea.

The depiction of the dolphin on the coins of the cities is thought to have begun at the same time and to indicate a political union on their part. Unfortunately no information exists about the relations between the Kean cities at this time.[19] It must not be forgotten, however, that there were many factors favouring a common organization between them,[20] and that there is frequent mention in literary sources of the formation of a league of the Kean cities, although they may refer to later periods. In these references the creation of a league is associated with the period of Eretria's dominance of the island, and perhaps a similar cause should be looked for in the Archaic period. The relevant passage in Strabo[21] does not cite a particular date, and we have therefore suggested different chronologies for these events, beginning with 8th/7th c. BC and extending to the 4th c. BC.[22]

Although it is difficult to support any of the proposed chronologies with much conviction, mention should be made of a probable Eretrian period of domination that falls within the period which interests us. According to Eusebius' list of thalassocracies,[23] Eretria's domination of the islands should be connected with its great naval expansion in 505-490 BC.[24] A further indication

16. T. Hackens, "Le monnayage de l'atelier de Délos à l'époque archaïque", *BCH* Suppl. I, 1973, 209-226.

17. M.J. Price, "The Function of Early Bronze Coinage", *AIIN* 25, Suppl., 351-365.

18. *Asyut Hoard*, 19.

19. Brett, 170, no. 1286.

20. J. Ducat, "La confédération béotienne et l'expansion thébaine à l'époque archaïque", *BCH* 97, 1973, 60-61.

21. Strabo X, 1. 10.

22. S.C. Bakhuizen, *Chalkis-in-Euboea. Iron and Chalkidians Abroad.* Chalkidian Studies III. Studies of the Dutch Archaeological and Historical Society, Leiden 1976, 29-36.

23. R. Helm, "Die Liste der Thalassokratien in der Chronik des Eusebius", *Hermes* 61, 1926, 250.

24. T. Hackens, op. cit. *BCH Suppl.* I, 1973, 222, note 47.

of the relations between the two areas at this time is perhaps to be seen in Koresia's choice of a cuttlefish as its coin type corresponding to the octopus of Eretria. We should bear in mind, however, that although the choice of numismatic types affords some indication of the relations between different areas, the real influence is evident from the choice of a currency system, which also has financial implications. In this period, however, Eretria used its own Euboean system, while Kea used the Aiginetic. Eretria's ascendancy may have been sudden and there was no time to change the currency standard, while the cities of Kea confined themselves to issues of coins publicizing their new political unity.

We should nevertheless point out that the use of this common iconography was not compulsory for the cities, at least as far as the smaller fractions were concerned and in the case of Ioulis and Karthaia, where one finds issues without a dolphin but with incuses similar to those of coins that also depict a dolphin. That these issues date to the last years of the Archaic mints can also be seen from the type of the incuses as well as the low denominations. From the political point of view this coexistence can be interpreted as the result of a certain freedom on the part of the cities to choose their own numismatic types, at least in respect of the smaller fractions, which were intended chiefly for the internal market.

After an interval during which most of the mints were forced to close down their operations, the cities started minting again in the mid 4th c. BC, most of them in silver.[25] Unfortunately the Kea issues in this period are very uncertain and offer no evidence for calculating the island's output at this time.

It only becomes possible to follow the principal minting operations of the Kean cities on a regular basis from the 3rd c. BC onwards. A feature of this period, unlike the previous one, is the great disparity in their production. The economic situation had changed significantly and each city decided its own currency policy according to its needs and capabilities. Koresia's output was scant and short-lived, Ioulis had a remarkably flourishing mint, particularly in the 1st c. BC, although it already had the richest currency by the 3rd c., and Karthaia had the best organized system in the 3rd c. BC. The sizes of the series, their duration and the care taken in their minting varies not only from city to city, but within the same workshop. The common elements that can be distinguished are those resulting from the broader trends within each period, such as styles, techniques and even the letter forms used in the inscriptions. On the other hand there is also an apparent interest in establishing a certain iconographical homogeneity between the cities, which led to series being struck by different cities that share common numismatic types. The badges of each city[26] are no longer unique, but are introduced into the issues of other mints, either as accessory symbols or as principal types. In the latter case it is difficult to determine whether the iconographical similarities also had a political significance.

25. D.M. Robinson, "A Hoard of Silver Coins from Carystus", *NNM* 124, 1952, 39.

26. L. Robert, "Les monétaires et un décret hellénistique de Sestos", *RN* 1973, 49. And earlier, L. Lacroix, *Les blasons des villes grecques, Études d'Archéologie Classique* 1, 1955-1965, 91-115.

	Koresia	*Ioulis*	*Karthaia*	*Koinon*
Apollo/Grape	V		V	
Apollo/Bee	**VI**	**VII_1**		
Apollo/Sirius		VIII	VIII	
Apollo/IOY		XIV		
Aristaeus/Star	**VII**	**IX**	**XI**	**III**
Aristaeus/Grape		**VI**	**VI**	**I**
Aristaeus/Bee		X	X	
Aristaeus/Sirius			**IX**	**II** (issues)
Zeus-Aristaeus/Bee		V		
Ktesylla/Grape		XI		
Ktesylla/Bee		XII		
Dionysus/Grape		XV	VII	
Bacchus/Grape		XIII		
Cuttlefish/Grape	IV			
Grape/Grape		XVI		
Bee/Star		XVII		
Amphora/Grape			IV	

With bold characters are shown the identical series, with plain characters those which only share common types.

The organization of the mints must have been very simple. Most issues are characterized by the total absence of symbols that might help to differentiate between them, their denominations, the relations between the fractions, or even the mint officials.[27] This means that these series must have been easy to distinguish and that there was no need to use symbols of this kind, although there may well have been something distinctive in the way the ethnic was written, as was the case with other mints.[28]

An important part of all the minting operations on Kea was concerned with the series of the League. Its production followed more or less the same principles that we find in the issues of the cities, such as the existence of a basic series, infrequently supplemented by other fractions, and the absence of numismatic symbols. A characteristic feature of the League was the use of only one numismatictype, which remained unchanged in nearly all the issues, and these can therefore only be distinguished from each other by minor differences in the treatment of the obverse type.

27. Picard, "L'administration de l'atelier monétaire à Thasos au IVe siècle", *RN* 1987, 14.
28. Picard, "Thasos et la Macédoine au IVe et IIIe s.", *CRAI* 1985, 770, note 25.

The mint of the 4th c. League can be sited at Ioulis,[29] while the 2nd c. League's mint operated in the Karthaia workshop.

The history of Kea in the 2nd c. BC and the prevailing political situation are not well known, and we therefore cannot tell whether any of the cities had achieved an ascendancy over the others and assumed leadership of the League and consequently of its mint.[30] Furthermore, the appearance of the issues of the League was neither sudden nor unrelated to the issues of the cities, and for a short time the cities and the League were striking coins contemporaneously. Soon, however, the production of the latter, probably as a consequence of its strengthened political position, outstripped that of the cities' mints,[31] although any of their coins that were in good condition continued in use alongside those of the League.[32]

29. For a comparable adoption of pictorial types of cities by Confederations, see W. Wallace, "The Euboian League and its Coinage", *NNM* 134, 1952, 4.

30. Picard, "L'Antre Corycien II", *BCH Suppl.* IX, 1984, 292, notes 28, 29. For the contrary view, insofar as it mentions the Thessalian League, see Th. R. Martin, *Sovereignty and Coinage in Classical Greece*, Princeton, New Jersey, 1985, 40. For an earlier chronology of the league issues, *HN* (2), 482, where it is contended that Kean coins were being struck until shortly after 300, while the coins of the cities continued in the 3rd and 2nd centuries.

31. Picard, loc. cit., 288, n. 16, and idem, *Chalkis et la Confédération Eubéenne. Étude de Numismatique et d'Histoire (IVe-1er siècle).* Bibliothèque des Écoles Françaises d'Athènes et Rome, Fasc. 234, Athènes 1979, where he comments on an alternation of the issues of the cities with those of the League.

32. See e.g. the contents of the Atzeritis find. Ch. Papageorgiadou-Banis, "The Atzeritis Hoard from Kea 1987", *QTic Num Ant Clas* 25, 1996, 169-176.

CHAPTER 5

METROLOGY AND TECHNIQUE

The Archaic period was marked by the spread of the Aiginetic standard of weights over the greater part of the Aegean, with the didrachm as the basic fraction.[1] Kea, as was natural, followed this system with all its fractions. This is clear from the results that have emerged from the calculation of certain parameters, using statistical methods.[2]

Two different trends were observed at Koresia, which do not appear to affect the standardization of the metrical system. The first is characterized by staters that were heavier than the Aiginetic, and the second shows a relative reduction in weight, not only of the staters but also of the smaller denominations. The differences in weight do not appear to be the result of chronological differences between the issues, but of the city's free choice. R. Holloway's belief concerning Andros[3] namely that the reduction in weight is related to the increase in coin production, could also be true of Koresia, since the lower denominations appear in many more coins than the higher ones. Nevertheless, this phenomenon does occur also at the other Kean cities, whose currencies must have had a parallel development. Thus, we can discern two different groups of weights, the first well beyond the standard of 12.00 grs, while the second is reduced.

The Ioulis issues appear to follow the Aiginetic standard more closely in regard to both the staters and the fractions. The problem that presents itself strongly at Ioulis is the large number of small fractions, which is linked with the attribution to it of the coins with the bunches of grapes. The weights of the fractions are variable and it is often impossible to fit them into the Aiginetan system. Nevertheless, the combination of the study of weights, types and incuses can protect us from wrong attributions.

1. *ACGC*, 329.

2. The statistic calculations, on which this chapter is based, were worked out by the late Alexandros Papageorgiadis, statistician. The parameters it was considered necessary to calculate were:

(1) The average arithmetical value or average arithmetical ($\bar{\chi}$), in the case of a simple series of data and in the case of classification of the data by frequency.

(2) The standard deviation, the formal deviation (σ), the mean square deviation in a simple series of factors and when the factors are distributed according to frequency.

(3) The coefficient of dispersion or variability (V). The V is not a natural number, but a percent unit. The smaller this percentage, the smaller is the dispersion of the data around the mean; that is, the mean is representative. See also Ch. Carcassonne, "Quelques méthodes statistiques utilisées en numismatique", *Statistique et Numismatique*, *PACT* 5, 1981, 17-56, and L. Artemis-Gyselen, "Les monnaies archaïques de Ténos", *RBN* 123, 1977, 5-15.

3. R.R. Holloway, *Archaic Coinage in the Cyclades*, ANS Summer Seminar 1957. See also Delos; T. Hackens, "Le monnayage de l'atelier de Délos à l'époque archaïque", *BCH* Suppl. I, 1973, 225.

The Karthaia issues with the amphora and dolphin are the most standard compared to those of the other cities.The weights of the staters do not exceed 12.00 gr, while the lower values seem to be due to natural wear. On the other hand, in the doubtful issues with the amphora but without the dolphin most of the staters are considerably heavier than the Aiginetic didrachm and weigh up to 12.37 gr.

Nevertheless, the important variations seen in the weight of the coins, fit always within the framework of the Aiginetic metric system.

KORESIA				
Series	*Denomination*	*Weight*		
		$\bar{\chi}$	σ	*V*
I	Staters	11.64	0.54	4.60%
	Drachms	5.62	0.35	6.23%
II	Hemidrachms	2.71	0.26	9.60%
	Obols	0.89	0.10	1.10%
III	Hemiobols	0.34	0.06	1.90%

IOULIS				
Series	*Denomination*	*Weight*		
		$\bar{\chi}$	σ	*V*
I	Staters	*		
	Hemidrachms	2.84	0.26	9.1%
	Trihemiobols	*		
	Obols	0.79	0.20	25.30%
II	Staters	11.96	0.05	0.41%
	Drachms	*		
	Hemidrachms	2.00	0.74	37.00%
	Trihemiobols			
	Obols	0.91	0.068	0.37%
III	Hemiobols	0.47	0.028	0.60%

KARTHAIA				
Series	*Denomination*	*Weight*		
		$\bar{\chi}$	σ	*V*
II	Staters	11.51	0.26	2.3%
	Hemidrachms	2.95	0.02	0.68%
	Obols	0.91	0.072	0.08

When minting was resumed in the 4th c. BC, it was based on the diminished Attic system.[4] The issues of this period are few and too problematical to warrant many conclusions. The silver coins that have survived must still have represented drachms, although some of them had much smaller weights. The small Series IV of Ioulis and III of Karthaia were the last to be struck in silver by the cities of Kea. From then on their mints were organized to conform to the new economic situation that had developed[5] and they struck only bronze coins.

Koresia shows the most restricted production.

Series	*Nr. Coins*	*O./R. Diameter*		*Weight*	*Diameter*			*Weight*		
					$\bar{\chi}$	σ	V	$\bar{\chi}$	σ	V
IV	23	12/13	12-10	2.50-1.00	11.10	0.77	6.90%	1.59	0.46	28.9%
V	12	2/6	19-15	5.00-2.93	17.33	1.21	7.00%	3.56	0.58	16.3%
VI	19	9/14	21-18	7.18-3.85	19.35	0.825	4.26%	5.71	0.99	19.3%
VII	18	6/3	13-11	2.69-1.04	13.00	0.82	6.31%	2.01	0.47	23.4%

Series IV (Cuttlefish/Grapebunch) seems to be a small fraction at the same levels as the later Series VII.

Series V (Apollo/Grapebunch) is connected with VI (Apollo/Bee) iconographically as well as metrically.

Series VI appears to be a little later and probably replaced V; they both seem to have represented approximately the same denomination.

Series VII (Aristaeus/Star) constitutes a fraction of VI.

The Ioulis mint was the richest, and continued its minting operations on a large scale throughout the 3rd and 1st c. BC.

Series	*Nr. Coins*	*O./R. Diameter*		*Weight*	*Diameter*			*Weight*		
					$\bar{\chi}$	σ	V	$\bar{\chi}$	σ	V
V	1	1/1	15	5.03						
VI_1	2	1/2	1	3.09-2.26						
VI_2	1	1/1	11	1.22						
VI_3	1	1/1	9	0.94						
VII_1	9	1/5	19-17	6.50-4.76						
VII_2	16	5/8	19-14	5.10-3.46	18.12	0.89	4.9%	5.56	0.48	8.6%
VII_3	15	3/9	15-11	3.12-2.02						
$VIII_1$	25	7/14	15-10	3.34-1.45	12.75	1.14	8.9%	2.25	0.41	18.2%
$VIII_2$	12	7/9	13-11	2.26-1.10	11.73	0.22	1.99%	1.74	0.32	18.4%

4. *HN*, 480.

5. M.J. Price, "Early Greek Bronze Coinage", *Essays presented to Stanley Robinson*, Oxford 1968, 90-104; idem, "The Function of Early Greek Bronze Coinage", *AIIN*, Supl. 25, 1979, 351-365.

Series	Nr. Coins	O./R.	Diameter	Weight	Diameter			Weight		
					$\bar{\chi}$	σ	V	$\bar{\chi}$	σ	V
IX	4	2/3	13-10	3.02-1.33	10.33	2.07	20.00%	1.12	0.39	34.8%
X_1	21	1/1	14-11	3.98-2.50	12.63	1.85	14.60%	3.27	0.48	14.68%
X_2	29	2/1	16-13	4.97-2.20	14.58	0.77	5.30%	3.44	0.66	19.20%
X_3	12	4/7	15-11	2.67-1.51	12.10	1.11	8.30%	1.97	0.28	14.20%
X_4	6	4/6	11-8	1.44-0.40	0.67	0.83	8.30%	0.99	0.33	33.30%
XI_1	5	1/3	20-17	5.77-3.30						
XI_2	6	2/3	18-15	5.92-3.37	16.22	1.35	8.32%	4.95	0.91	18.40%
XI_3	16	2/5	17-15	5.63-3.72						
XII	78	24/26	14-7	2.60-0.70	10.26	1.01	9.80%	1.31	0.47	35.90%
XIII	4	2/2	12-10	1.91-1.14						
XIV_1	19	2/6	10-7	1.03-0.55	9.69	1.08	11.10%	0.94	0.24	25.50%
XIV_2	8	1/5	12-10	1.77-0.85						
XV	3	2/1	13-11	5.08-4.05						
XVI	2	2/2	8	0.93-0.56						
$XVII_1$	27	8/6	11-9	2.12-0.84	9.77	0.64	6.60%	1.34	0.28	20.90%
$XVII_2$	4	1/2	9-8	0.79-0.62	9.00	0.71	7.90%	0.98	0.40	40.60%
$XVII_3$	5	1/2	10-9	1.03-0.52	9.00	0.45	5.00%	0.81	0.20	30.50%
$XVII_4$	12	6/5	9-8	0.93-0.37	8.17	0.16	1.96%	0.58	0.14	24.14%

The unique coin of Series V (Zeus-Aristaeus/Bee) seems to be the transitional one from the AR series with the same obverse type to the later issue VII, with which share the same weight and dimension.

Series VI (Aristaeus/Bunch of grapes), with three different issues, of variable weights, has the same type as Series VI of Karthaia and I of Koinon. But it is only her Issue 2 that corresponds metrically to them.

Series VII (Apollo/Bee), which used the same types as VI of Koresia, also has a similar range of weights and sizes.

Its relation to VIII (Apollo/Sirius) is not yet quite clear, but if we accept that they are contemporary, then the two issues of VIII would have served as fractions of VII.

Series IX (Aristaeus/Star) corresponds iconographically to VI of Koresia and XI of Karthaia as regards weight and size but appears to be smaller than them.

X (Aristaeus/Bee) is characterized by the distinctions between its issues with emblems and monograms. Although there is considerable diversification, it does not appear to be very significant. Issue 2 is slightly larger, and 3 seems to be smaller. 4 is the smallest issue in the series.

XI (Ktesylla/Grape bunch) is linked to X by the same symbols and monograms, which evidently did not indicate same denominations, but were the identification marks of the supervisors of the issues, since the limits of XI are higher than those of X.

A feature of XI is its homogeneity in terms of the weight and size of the coins of all issues, which is not the case with those of its fractionary series X.

XII (Ktesylla/Bee in wreath) is a fraction of X or XI. The same applies to XIII (Apollo/IOY in wreath) and XIV (Bacchus/Grape bunch). However, their iconographical differences makes it difficult to correlate them with any of the previous series.

XV (Dionysus/Grape bunch) is a small series metrically corresponding to XI.

Series XVI (Grape bunch/Grape bunch) consists one of the lower denominations of Ioulis.

These series, from X to XVI, could be organized in groups according to their reverse types.

Group 1			
XI	*(Ktesylla/Grape bunch)*	*20-15 mm*	*5.92-3.72 gr*
XIV	*(Bacchus/Grape bunch)*	*12-7 mm*	*1.39-0.55 gr*
XV	*(Dionysus/Grape bunch)*	*13-11 mm*	*5.08-4.05 gr*
XVI	*(Grape bunch/Grape bunch)*	*8 mm*	*0.93-0.56 gr*
Group 2			
X	*(Aristaeus/Bee)*	*16-11 mm*	*4.97-1.50 gr*
XII	*(Ktesylla/Bee in wreath)*	*12-7 mm*	*2.60-0.70 gr*
XIII	*(Apollo/IOY in wreath)*	*12-10 mm*	*1.19-1.14 gr*

XVII (Bee/Star) was also a series of fractions. Each issue could have been representing a different fraction, which was denoted by the number of the rays of the star on the reverse.

The mint of Karthaia shows a well organized production.

Series	***Nr. Coins***	***O./R. Diameter***		***Weight***	***Diameter***			***Weight***		
					$\bar{\chi}$	σ	*V*	$\bar{\chi}$	σ	*V*
IV	1	1/1	15	2.70						
V	1	1/1	12	1.42						
VI	6	4/2	12-9	1.43-0.84						
VII	44	23/22	20-16	7.06-3.20	18.24	0.81	4.44%	5.17	0.88	17.02%
$VIII_1$	39	15/23	23-17	8.64-3.95	19.38	1.18	6.00%	6.65	1.47	22.10%
$VIII_2$	34	5/9	24-18	6.91-4.29	19.75	1.60	8.10%	5.56	0.734	13.13%
$VIII_3$	24	9/19	17-15	5.67-2.97	15.80	0.75	4.75%	4.05	0.81	20.00%
$VIII_4$	19	7/10	20-15	9.49-3.88	18.58	1.77	9.50%	5.48	1.29	23.50%
$VIII_5$	2	1/1	20-17	7.18-3.93						
$VIII_6$	1	1/1	11	1.45						
IX	3	2/3	17-16	4.98-4.05						
X	3	2/3	16-14	4.20-2.13						
XI	20	8/12	15-13	3.70-1.45	13.39	2.18	16.28%	2.05	0.61	29.76%

The extremely small series IV (Amphora, dolphin/Bunch of grapes), V (Apollo/Bunch of grapes) and VI (Aristaeus/Bunch of grapes), sharing almost identical reverse types, denote the same denomination. They could possibly represent fractions of the silver issues of the period.[6]

VII (Dionysus/Bunch of grapes) is difficult to correlate with any of the subsequent series, since its iconographical types fall outside the established iconography of Karthaia. The weights and dimensions of the coins are on a par with those of VIII, which can be dated a little later.

VIII (Apollo/Sirius) is the largest of the Karthaia series. Its issues, apart perhaps from 3, do not constitute different fractions, and their slight differences should be interpreted as indicating distinctions more connected with the organization of the mint. The unique coin of its Issue 6 cannot be taken in account.

Series IX (Aristaeus/Sirius), sharing the same dies with coins of the Koinon, has also the same weight.

Series X (Aristaeus/Bee), is also a small fractional series.

Series XI (Aristaeus/Star), similar iconographically to VII of Koresia and III of the Keans, is on a par with them and constitutes a series of fractions.

From Karthaia the most numerous series are the VII, VIII and XI, the others consist from 1 or 3 coins, which are not enough for a statistical valuation.

The mint of the Keians shows some peculiar characteristics.

Series	*Nr. Coins*	*O./R.*	*Diameter*	*Weight*	*Diameter*			*Weight*		
					$\bar{\chi}$	σ	V	$\bar{\chi}$	σ	V
I	15	11/9	12-10	2.10-1.11	11.38	1.22	10.70%	1.686	0.37	21.90%
II_1	22	3/11	19-14	5.24-3.35						
II_2	10	3/7	17-15	5.20-3.69						
II_3	14	1/8	18-14	4.66-3.03						
II_4	10	4/10	18-15	5.10-2.58						
II_5	10	2/8	18-15	4.90-3.10						
II_6	39	16/24	18-13	5.20-2.33	16.12	1.16	7.20%	2.027	0.42	20.70%
II_7	17	4/13	18-15	4.67-1.40						
II_8	17	1/14	19-15	5.12-3.01						
II_9	15	2/8	17-15	4.63-3.04						
II_{10}	9	5/9	17-14	4.18-3.03						
II_{11}	4	3/4	17-16	4.10-3.50						
III	12	9/10	15-12	2.98-1.40	13.58	1.08	7.90%	2.0275	0.42	2070%

Series I (Aristaeus/Bunch of grapes) of the Keans also corresponds metrically to the parallel series of the cities.

Series II (Aristaeus/Sirius) was the basic one of the League in the 2nd c. BC and constituted a particular fraction. Its different issues have the same weights and dimensions, and the observed differences were not intended to distinguish fractions.

6. For series VI see above, Ioulis.

III (Aristaeus/Star), corresponding to VII of Koresia and XI of Karthaia and on a par with them, is perhaps the only fraction struck by the League in this period.

There is a general homogeneity in the weights and sizes of the coins struck by the cities, which seem to have followed a common metrical system, Karthaia strucking a little heavier denominations. For the three cities, as for the League, two basic fractions can be distinguished, which were rarely supplemented by others.

It must be emphasized that in the bronze coins, whose value was chiefly nominal and not real, the weight was not the decisive factor in the distinction between the fractions, as it was with the silver coins. We cannot of course say that the use of any weight for the bronze coins was entirely uncontrolled, but certainly less care was given to fixing it than in the case of the silver issues. For this reason the statistical factor V of the weight of most of the series is quite a significant percentage, which means that the average limit is not indicative for these series. One must of course bear in mind the considerable wear suffered by the bronze coins, which perceptibly altered their original weight. Unlike the weights, the V of the diameters, which is usually low, below 10%, shows that the average value is indicative. Interest in the distinction in value was centred on the sizes of the coins, which, together with the differences in their iconography make it easier to differentiate between them.

A preference is apparent for the larger fractions, often without them being followed by other smaller ones. It is difficult to make out what their real value was. If we accept that the smaller coins of 3.00-1.00 gr represented the chalkus, then the larger ones would have been fractions of the obol.

The series that were common to the cities also had the same weights and sizes, which means that they were accepted everywhere and constituted a common denomination for the whole island, independently of the existence or not of a League. The fact that most of them were small denominations and consequently supplementary to the system as a whole means that they were intended rather as a political gesture than to be incorporated in the regular numismatic system of each city.

As far as the technique is concerned the influence of Aigina, as of Athens, is also apparent on the Archaic mints of Kea.[7]

Most of the coins are considerably expanded, having lost the spherical shape of the early years.[8] The expansion and smoothing of the flan were usually due to two causes: either a simple hammer blow before the coin was struck in the regular manner,[9] or, at a more advanced stage of technique, to the pressure exercised by the punch itself, from which the die projected.[10] For the coins of Kea both methods could have been used. In the case of some of them, it seems that the flan was prepared using some sort of file, which left fine visible scratches on the surface.[11]

7. G. Konofagos, E. Banteka, K. Tsaimou, «Ἡ ἀθηναϊκὴ τεχνικὴ τῆς νομισματοκοπίας κατὰ τὴν κλασσικὴν ἐποχήν», *ΠΑΕ* 51, 1976, 359-405, where the Greek terminology is given. For more on Aigina, see L. Beer, "Results of Coin Striking to Simulate the Mint of Aigina", *Proceedings of the 9th International Congress of Numismatics*, Berne 1979, Vol. I 1982, 47-51.

8. *The Elder Turtles*, 1.

9. *The Elder Turtles*, 39; P. Naster, "Le carré creux en numismatique grecque", *Numismatique antique*, 1975, 17.

10. *The Elder Turtles*, 39; *Asyut Hoard*, 75.

11. For the same technique, P. Naster, "La technique des monnaies archaïques d'Himéra", *AIIN Suppl.* 15-16, 1970, 62. Also, on problems of metallurgy, see E. Madsen, "Concerning 'Lines' on Some Ancient Coins", *SAN* 11, 3, 1980, 44-45; 4, 1980-1981, 64-67, and idem, "Concerning Edge Cracks and Notches on Ancient Coins", *SAN* 12, 3, 1981, 56-57.

The dies were in use for long periods and many were already broken when they were used, with the result that some of the details were not stamped into the coins; on the other hand the obverse dies were apparently replaced at regular intervals before they suffered damage. These were often larger than the flans, so that the complete die impression was not reproduced, whereas the die impression on the reverse was usually smaller and a large part of the flan was left blank. On some coins the die impression is not deeply embedded in the metal. This may have been due to the globularity of the flan, incorrect positioning of the die, or insufficient force applied to the punch.[12]

A rather rare technique also occurs, in which the reverse of the coin was left smooth, with no trace of an incuse.[13] There are examples of this type in many small fractions from Koresia and Karthaia. This technique does not seem to denote a particular chronological period, but it must have appeared towards the end of the Archaic phase. The Koresia hemiobols with the same obverse type, on which the reverse is either smooth or has an incuse, are assigned to the end of the Archaic production of the city, like the corresponding coins of Karthaia.

The period of experimentation in the Archaic period came to an end when production in the workshops of Aigina and the other islands was interrupted. When most of them began striking coins again, the technique of minting was already established, and important advances had been made in other centres. The cities of Kea which resumed minting in the late 4th c. BC had as models many mints that had already started operating. This time advances in technique resulted in the coins having a relatively homogeneous form, not only between the workshops of Kea, but in Greece as a whole. In the period after 300 BC the flans of the coins became thinner and broader. In the larger fractions a characteristic depression was frequently formed on the obverse side by the impact of the die,[14] something that did not occur on the smaller fractions because of their size.

Whether the dies had a long period of use or were quickly abandoned depended on the circumstances and capabilities of each workshop, and was not a characteristic of the issues, although it did depend to a large extent on workshop's productivity.[15] This also applied to the position of the die impression on the flan and the die axis of the two representations.[16] This liberation from the conventions of technique left the field free, and what resulted from it was governed by the degree of responsibility or laxity of the mint officials and their assessment of the circumstances requiring new series to be struck. Differences can be observed in the issues in a general way, but it is not possible to discern particular marks enabling individual workshops to be distinguished.

12. F. de Villenoisy, Ch. Fremont, "Le carré creux des monnaies grecques. Évolution des procédés de fabrication", *RN* 1909, 454.

13. *The Elder Turtles*, 39.

14. T. Hackens, "Terminologie et techniques de fabrication", *Numismatique Antique*, 1975, 7.

15. For the length of life of the dies, O. Mørkholm, "The Life of Obverse Dies in the Hellenistic Period", *Studies in Numismatic Presented to Philip Grierson*, Cambridge 1983, 16. For the intermittence of production, idem, "The 'Behaviour' of Dies in the Hellenistic Period", *Proceedings of the 9th International Congress of Numismatics*, Berne 1979 (1982), 210.

16. D.M. Robinson, "A Hoard of Silver Coins from Carystus", *NNM* 124, 1952, 23: "placing the punch die at a right angle to the anvil insures that the long axes of the dies are in the same direction, with a resultant distribution and equalization of pressure in use which would prolong the life of the dies".

CHAPTER 6

CIRCULATION OF COINS

Kea's minting activity in the Archaic period, although of some importance, never appears to have been sufficiently vigorous to reach beyond the confines of the island. Aigina, on the other hand, was a great economic power at this time whose influence extended over the greater part of the then known world, and whose "turtles" covered the currency requirements of a wide area.[1] Consequently Kean coins are rarely found in hoards outside the island, and the identification of the coins is especially problematical.

Apart from the Karthaia triobol, which came from the Taranto hoard (1911),[2] in every other case the coins are of the type with an amphora and no dolphin, whose attribution is doubtful. Two staters of this type come from hoards on Santorini (1821)[3] and the Cyclades (1889),[4] and a third one, believed to belong to Karthaia, was found on Mt Antilibanus.[5] Although the evidence offered in the publication of this last find for its attribution to Karthaia is quite convincing, nevertheless the type of the amphora with the bunch of grapes on either side remains unique for Kea. Other staters, chiefly from Koresia, reached Aigina, where they were used as flans for local coins. One such example is the stater from Myrina,[6] and there is another in the Numismatic Museum at Athens, which probably belongs to a find from Boeotia.[7] These last instances perhaps account for the rarity of Kean coins outside the island. As was often the case with Archaic coins, they were used as sources of metal for other mints, and only the issues of large mints, like those of Aigina and Athens, due to their recognized value, circulated in their original form.

Of the later periods very few coins have been found outside Kea, especially in neighbouring regions. Most of them come from the Athenian Agora[8] (3 of Koresia, 3 of Ioulis, 4 of Karthaia and 8 of the Koinon) and the rest from the Cycladic islands. Two coins of the KEIΩN are found

1. The establishment of Aigina's power and the diffusion of its coinage is apparent from a cursory reexamination of the coin hoards. Apart from the Cycladic islands, Aiginetic turtles have been found on Crete and in Corinth, Thessaly, South Italy and Egypt. For the economic power and commercial extent in this period, Th. J. Figueira, *Aegina, Society and Politics*, New York, 1981, Chap. 4, 230-286.

2. *IGCH* 1874; *Asyut Hoard*, 17.

3. *IGCH* 7; *Asyut Hoard*, 17.

4. *IGCH* 7, *Asyut Hoard*, 17. All the earlier bibliography will be found in these publications, and the last dates proposed by the authors of Asyut Hoard are particularly interesting.

5. S. Hurter, E. Pàszthory, H. Bloesch, "Archaischer Silberfund aus dem Antilibanon", *Festschrift für Leo Mildenberg*, Wetteren, Belgium 1984, 117, 124-125, no. 40, pl. 15.

6. M. Caramessini-Oeconomides, "The 1970 Myrina Hoard of Aeginetan Staters", *Essays in Honor of M. Thompson*, Wetteren, Belgium 1979, 231-239, no. 49, pl. 27.

7. NM, PK 10. My attention was drawn to this by Mrs Mando Oeconomides, who believes it belongs to the find *IGCH* 59, which probably came from Boeotia.

8. F.S. Kleiner, "The Agora Excavations and Athenian Bronze Coinage 200-86 BC", *Hesperia* 45, 1976, 19; R.S. Young, "An Industrial District of Ancient Athens", *Hesperia* 20, 1951, 263, in which the coin of the Koinon is attributed to Karthaia, and J.H. Kroll, *Agora*, 251-252, nos. 831-840.

in the Sanctuary of Poseidon on Tinos,[9] one of Ioulis at Kionia[10] and one more on Delos.[11] In all four instances they were stray finds and not from coin groups, thus being indicators only of contacts between the Keans and other localities. Such a situation in the Hellenistic period does not surprise us, because we know that bronze coins did not as a rule circulate much beyond the limits of the city that struck them.[12] From more far away, one coin of Ioulis, is reported from Pella.

Any attempt to reconstruct the circulation of coins on Kea with the evidence available at present is hazardous. The absence of issues struck by mints, which probably circulated on the island much more widely than would appear from the finds, is certainly due to the shortage of further evidence from excavations or hoards.

In practice most commercial transactions must have been carried out with coins of other cities. Kea's economy was chiefly dependent on its powerful neighbours and allies, who naturally had no reason to exchange their own coinage for that of the Keans. The coins of other cities were also used to cover the revenues of the island, whether these derived from the exploitation of the island's products, from pilgrims visiting the sanctuaries, or from harbour dues.[13]

Indications of Archaic foreign coins on Kea are few: two coins of Koresia were apparently struck on Aiginetic turtles,[14] and one from Koresia, one from Ioulis and one from Karthaia appear to have been struck on coins of other cities, although it is not possible to identify them.[15]

For the later periods even inscriptions are not particularly enlightening. When they mention monetary sums, the amount in drachms is usually given, but not the numismatic authority responsible for striking them.[16] They would probably have been the strong currencies of each period: those of Athens, Alexander the Great, the Ptolemies, and later Rhodes. The existing

9. *Ténos* I, 1, 2, 498, nos. 67, 68, Pl. 156.

10. Of the type BMC 81, 1-4; 89, 1-6. Athens Β.Π.293/1978.

11. *DEA* XXVII, 397, Pl. 67.

12. M.J. Price, "Early Greek Bronze Coinage", *Essays presented to S.M. Robinson*, Oxford 1968, 90-104; T.V. Buttrey, "More on the Athenian Coinage Law of 375/4 BC", *QTicNumAntClas* 10, 1981, 88-89.

13. Apart from Koresia, there were also harbour installations at Karthaia; there is also mention of a Sacred Harbour in the district of Poiessa, near modern Koundouro. On the harbour revenues see L. Robert, «Λιμένες», *Hellenica* 11-12, 1960, 263-266.

14. Cat. nos. 38, 39.

15. Cat. nos. 40 from Koresia, 5 from Ioulis and 5g from Karthaia.

16. *IG* XII 5. 1, 530, 544, 568 569, 593, 602, 604, 610, 647. On the other hand, see Th. Homolle, "Comptes et inventaires des temples déliens de l'année 279", *BCH* 15, 1891, 129; J. Delamarre, "Un nouveau document relatif à la Confédération des Cyclades", *RPh* 26, 1902, 299, n. 5; idem, "Les contrats de prêt d'Amorgos", *RPh* 28, 1904, 81-102. In an inscription from Delphi, *FD* III, V, 3661, Demophon the Kean used Attic obols.

evidence is slight. Excavations and surface surveys have only produced sixteen coins of other cities to date: one from Mykonos,[17] five from Athens,[18] one from Cassandrus,[19] and the other nine are coins of the Ptolemies, mainly Ptolemy II.[20]The presence of the Ptolemaic coins, to which five more can be added on the basis of their shape and size,[21] is the most important.[22] In 1976 R.S. Bagnall, writing about the circulation of Ptolemaic coins in Greece, says, in connection with the finds from the temporary military installations in Attica at the time of the Chremonidian War, that only one coin of this period had been found on Kea.[23] An undiagnostic coin, however, had already been found earlier in Graindor's excavations at Karthaia, mentioned above, and later excavations produced further Ptolemaic coins.[24] Even if the number of coins is too small to allow of conclusions, it is worth remarking that they nearly all come from the northern part of Kea, where the naval base of Patroclus was located at Koresia during the Chremonidian War.

17. From the survey by J.L Davis and J.F. Cherry.

18. Two silver Athenian coins were handed in by A. Mykoniatis in 1987; see p. 70. A bronze coin of the type J. *Kroll*, "Two Hoards of First-Century BC Athenian Bronze Coins", *AΔ* 27, 1972, A΄ (1973), 118, no. 657-689, pl. 39, 12-16, dated to ca. 25 BC, was found in the Ayia Eirene excavations. A bronze coin of the type F.S. Kleiner, "The Agora Excavations and Athenian Bronze Coinage 200-86 BC", *Hesperia* 45, 1976, 45, nos. 31-33, pl. 2, of the 1st c. BC, was found by the Ephor of Antiquities K. Tsakos in 1983 on the rocks by the sea under the Michalos house, between Koresia and Vourkari. Another of the same type came from the acropolis of ancient Poiessa.

19. Of the type SNG Cop 1142-1153, (306-297 BC) from the excavations at Ayia Eirene.

20. One indeterminate from Karthaia, P. Graindor, "Fouilles de Karthaia", *BCH* 1905, 351-352. One of Ptolemy II of the type Svoronos, *Πτολεμαῖοι* no. 617, pl. II, 32. Two of Ptolemy II of the type Svoronos, loc. cit., no. 576, pl. XIII, 19-22, from the cleaning of the Mouzakis building plot at Koresia. One of Ptolemy I or II of the type Svoronos, loc. cit., nos, 269-188, pl. X, 1-10, from the excavations at Ayia Eirene. Another, undiagnostic, of Ptolemy (Euergetes?) was bought on the island by J.L. Caskey. One of Ptolemy I of II was found in 1984 in the Koresia district by the DAI architect, Dr W. Hoepfner. One of Ptolemy II was found in 1984 by the custodian of antiquities E. Lepouras. One of Ptolemy II came from the survey by Davis and Cherry.

21. They are very worn coins and quite undiagnostic that came from Ayia Eirene.

22. For the circulation of Ptolemaic coins, particularly those of Ptolemy II, in Greece, see E. Varoucha-Christodoulopoulou, «Πτολεμαϊκὰ νομίσματα στὴν Κυρίως Ἑλλάδα. Ἀρχεῖον τοῦ Θρακικοῦ Λαογραφικοῦ καὶ Γλωσσικοῦ Θησαυροῦ», Athens 1941, 668-679, and T. Hackens, "À propos de la circulation monétaire dans le Péloponnèse au IIIe s. av. J.C.", in *Studia Hellenistica*, Antidorum W. Peremans sexagenario ab alumnis oblatum, Louvain 1968, 82-90. For the currency policy of the Ptolemies generally, Th. R. Martin, *Sovereignty and Coinage in Classical Greece*, Princeton 1985, 225.

23. R.S. Bagnall, *The Administration of the Ptolemaic Possessions outside Egypt*, Leiden 1976, 204. This is the same coin as that published by Varoucha, «Συμβολὴ εἰς τὸν Χρεμωνίδειον Πόλεμον», *AE* 1953-1954 (1961), 239.

24. J.F. Cherry, J.L. Davis, "The Ptolemaic Base at Koressos on Keos", *BSA* 86, 1991, 9-28.

Coins of foreign mints at Kea

	Athens	*Myconos*	*Cassander*	*Ptolemies*
Karthaia	2 AR (4th B.C.)			2
Ioulis				1
Koresia	1 AE (1st B.C.)	1 AE (1st B.C.)		4
Ag. Eirini	1 AE (25 B.C.)		AE (306-297)	6
Poiessa	1 AE (1st B.C.)			
Kea				1
Total	5	1	1	14

Only one coin hoard comes from Kea, from the locality of Atzeriti near Karthaia.[25] It was handed in to the authorities in July 1987 by A. Mykoniatis, who reported that together with the fourteen bronze Kean coins[26] three Athenian silver coins had been found, of which two were handed in.[27] However, the composition of the hoard as a whole is not consistent with the presence of the Athenian coins, which must be considered as intrusions; nor, consisting as it does only of local coins, does it bear out the proposed dates. Nevertheless its discovery remains important for two reasons. On the one hand, the good condition of the issues of the KEIΩN compared with the worn state of the coins of Karthaia shows that the issues of the cities had already been in circulation for a considerable time before they were buried, and that these pieces must have been relatively later. This further confirms the view that at around the end of the 3rd c. BC the cities stopped producing their own coins and gave precedence to a common mint, whose output constituted the sole unit of currency for the whole of the 2nd c. The coins of the cities that were already in existence continued to circulate alongside those of the KEIΩN.

25. Mykoniatis found the coins inside a small vase, probably a lacrimarium, according to his description, close to his house, between Atzeriti and Kephala. In the same spot, after the find was handed in, only a few sherds were found, which give no clue to the date. The vase in which the coins were found was destroyed by Mykoniatis.

26. They are coins of the League, of different issues, and one of Karthaia, cat. no. 156, which has the same die impression as the League coin no. 27.

27. The Athenian coins were probably found at a different time or in a different place by Mykoniatis, who merely gave them in with the other coins of Kea. For a detailed presentation of this hoard, see Ch. Papageorgiadou-Banis, "The Atzeritis Hoard from Kea, 1987", *QTicNumAntClas* 25, 1996, 169-176.

CHAPTER 7

NUMISMATIC EVIDENCE AND HISTORY

The information we have about Kea from literature and excavations is minimal and incomplete, as it is for most of the small islands of the Cyclades. From the numismatic evidence, however, it is possible to learn something about the island's economic condition from the Archaic to the Roman period.

The 6th and 5th c. BC were a period of prosperity for most of the Cycladic islands. Ambitious building programmes, great productivity and experimentation in the field of art, and extensive commercial activity, together with a broad cultural flowering, can be observed to a greater or less degree throughout the Aegean world.

In Kea all these happenings have left a clear record in her cities, and especially in Koresia, Ioulis and Karthaia, while for the fourth, Poiessa, although indications exist of settlement in the district, they are insufficient to reconstruct its history.

The richest and more impressive remains of the Archaic period come from Karthaia, where among other structures the striking 6th c. BC doric temples of Apollo and Athena have survived in fine condition. The almost simultaneous sculptural decoration of the temples[1] created a need for huge quantities of construction material, either local, like the blue marble, or imported, like the white marble for the sculptures and roof, as well as the poros for the columns of the temple of Athena, and at the same time it entailed the employment of large numbers of skilled workmen; the cost of all this could only have been met by a very prosperous city. And if we also think that the temple of Athena was most probably the work of an architect versed in the Peloponnesian tradition, then the picture becomes clear of a city that, in addition to the Cycladic craftsman who designed the temple of Apollo, was also open to other foreign influences.

It would be natural to suppose that all this extensive building and commercial activity must have been backed by a corresponding numismatic production. This could be linked to a broader architectural programme that also included the walling and construction of the harbour and other buildings, which has started from the end of the 6th c. onwards.[2] The chief contradiction between the archaeological and numismatic evidence lies in the fact that the number of surviving die impressions is too small to match all this activity.

The remains of the Archaic period from the other two cities, Koresia and Ioulis, are few but significant.

At Koresia it is witnessed by the building of a small, typical, Late Archaic Doric temple, dating to 500 BC,[3] and by the discovery of fragments of kouroi, the principal find being the kouros of

1. E. Ostby, "The Athenaion of Karthaia", *Op. Ath.*, 13, 1980, 189-223.

2. L. Mendoni, «Ἀρχαιολογικὲς ἔρευνες στὴν Κέα: Ἀρχαία Καρθαία», *Ἀρχαιογνωσία* 4 (1985-86) 1991, 149-182.

3. G. Welter, "Von griechischen Inseln: Keos I", *AA* 69, 1954, 69 - 87; H. Lauter, "Bemerkungen zum archaischen Tempel von Koressia", *AA* 1979, 7-16.

540-530, which came to light in 1937. The modern construction that was built on top of the ancient one destroyed the greater part of its remains, and it is therefore difficult to be sure of the real picture of the ancient city.

Our fragmentary knowledge of it is somewhat assisted by a study of the coinage. Its limited but well-organized mintage points to a small but equally well-organized polity. Moreover, the finding of its issues overstruck on others, or of types of foreign mints struck on Koresia coins, makes it clear that the city's economy relied more on the coins of other cities, thus profiting by being the possessor of a fine natural harbour.

Equally unfortunate was the destruction of the ancient evidence at Ioulis. Here too, however, we can reconstruct the picture of a powerful and prosperous Archaic polity contemporary with Karthaia and Koresia. The existence of a temple of Apollo is known from a votive inscription dating to the end of the 5th or beginning of the 4th c. BC (*IG* XII, 5, 615), and a huge lion, modelled after the the 6th c. BC lions at Miletus and Didyma,[4] adorned the ancient city. The archaic minting activities of Ioulis are equally fragmentarily preserved. The series are small, without continuity, showing that the city had no particular need of systematic minting during its brief apogee.

From what has been said above, as also from the general prevailing impression, it might seem that the three cities followed a parallel course, with Karthaia in the head, which seems to be partly the truth.

Comparing quantitatively the surviving die impressions[5] of the coins with a dolphin on the type, we see that:

1. all the mints display almost the same die production;
2. there were fractions that did not appear at all or else in very small numbers, as was the case with the drachms;
3. hemidrachms seem to be popular to Koresia and Karthaia;
4. trihemiobols appeared only at Ioulis, no doubt the result of the peculiar metrical system to which the "botryophora" belonged; to this may be also owed the scarcity of the median denominations;
5. Koresia possessed perhaps the most rationally organized structure of all the mints in the island;
6. lastly, the most peculiar observation is that Karthaia, which displayed an impressive building activity, manifested a limited output, at the same levels to the other mints, while some fractions are even missing.

If we are to preserve the balance indicated by the archaeological data, we must re-examine the attributions to Ioulis, so that it can be seen to have a larger number of issues, comparable with the numbers from the other cities. As for Karthaia, we have to accept that the earlier issues without the dolphin continued in use alongside the subsequent issues with the dolphin, and this was the reason why Karthaia had not to strike a large number of coins with the second type. This is an acceptable situation, given the short period of time during which its mint was functioning.

4. G. Welter, op. cit. *AA* 69, 1954, 48-94.

5. Since we are dealing with the operation of mints, the calculation is made on the basis of die impressions and not the surviving coins. Even so, it can only be taken as an indication, because their simple shapes and great wear often make their identification very problematical.

The inference of all these mentioned above is that the minting of coins was determined by the needs of each city, but not her internal needs, as for building projects, but her external ones, like the commerce with other regions. This is why Koresia, the port, had such a well-organized coin production, while the others did not, the costs for their needs being also met by exchange of goods.

In the following centuries, from the 4th c. BC onwards, when the cities recommenced minting coins, the picture of their numismatic and economic operations is more in keeping with the arcaeological evidence and what is known from literary sources.

The mintage of all three cities remained relatively restricted, as did their other activities, and was destined only for local assumption. In this period the League's coin output, which increased considerably in the 2nd c. BC, had an important place.

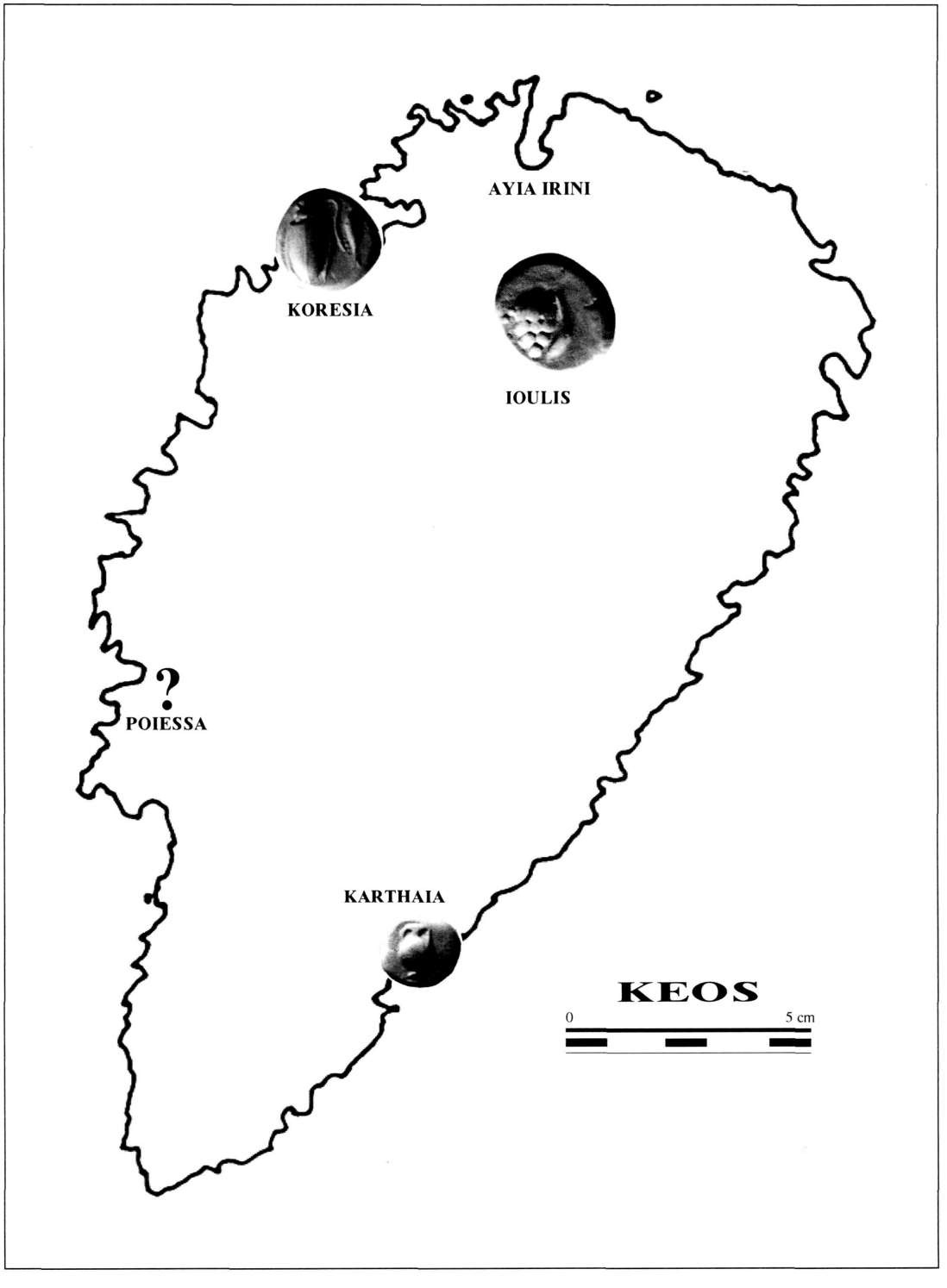
It is clear from a comparative study of the data that while Koresia, which as we already know from the literary and excavation evidence[6] rapidly dwindle and was assimilated by Ioulis, had an equally limited mintage, Ioulis and Karthaia had a considerably greater production. In the case of Karthaia, its principal minting activity occurred in the 3rd c. BC, when it was the paramount religious centre of the island. Ioulis' numismatic operations, on the other hand, developed in the 1st c. BC., a period for which, however, there are no specific references concerning its position in the island's organization.

The coinage thus reflects the same features that mark the coexistence of the four cities. On a political level each of them, while maintaining its autonomy and self-sufficiency, had developed a particular character which overran its boundaries and spread to the rest of the island. Karthaia was always the primary religious centre, and Ioulis the administrative one, as we can see from the monuments and inscriptions. Koresia, due to her position, became the harbour that served the hinterland, while in the fertile district of Poiessa the citizens also of other cities possessed estates.

On the numismatic side, a similar division is apparent in each city's operation and its coverage of the island's monetary needs. Nor we must forget that in a small community like that of Kea, totalling some 4.000 inhabitants,[7] where strong foreign currencies were also circulating, the local coinage existed more for political purposes. It would appear, therefore, that the operations of each of the numismatic authorities never exceeded a certain limit, which was about the same for all three cities, but each time for a different length of period. Karthaia supplied the largest part of the local currency circulation in the 3rd c. BC, the Kean League covered the 2nd and Ioulis the 1st c. BC.

The conclusion to be drawn from these differences is that the rate of minting did not follow a preset course, but was imposed by the practical necessities that had to be served. It still remains to be clarified whether the decisions came from a central authority, for which there is no evidence and which would presuppose the existence of a strong central power that must be sought outside the island. And yet neither the policy of Diadochoi nor that of each of the Leagues of Islanders appears to have followed such a course. Quite apart from that, the pressures of daily necessity were such that no external intervention was required, and further, we must not forget thet in the restricted confines of the island, where the relations that developed between the communities were amicable and complementary, their coins were able to circulate side by side and to be all accepted equally.

6. *Landscape Archaeology*, 265-281.
7. *Landscape Archaeology*, 280.


AYIA IRINI
KORESIA
IOULIS
?
POIESSA
KARTHAIA
KEOS
0
5 cm

CATALOGUE*

* The catalogue of the Archaic Keian mints was prepared jointly by Ch. Papageorgiadou-Banis and K.A. Sheedy on the basis of their independent research.

MINT OF KORESIA

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series I.		*AR*	*Obv. Cuttlefish*	*Rev. Incuse square*		
Staters						
Rev. Four segments						
1.	1	1	10.79			London, Fellows. Purchased at Telmessos, Lycia; BMC, 47; Traité 1914
2.	2	2	11.99			ex. Jameson 1278, *Feuardent* 2/5/1908, 323 (Col. P. Mathey); *Jameson* 1278; *Leu* 13 (1975) 173; *MuM* 76 (1991) 725; *Waddell List* 54 (1992) 36
Hemidrachm						
3.	3	3	3.10			London, Payne Knight; *BMC*, 51
Obols						
4.	4	4	[a] 0.96			Berlin
			[b] 0.79			Oxford, Oman 1947
			[c] 0.71			Paris; *Traité*, 1913
Series II.		*AR*	*Obv. Cuttlefish, dolphin,* ♀O	*Rev. Incuse square*		
Staters						
Obv. Dolphin or tuna r. ascending				Rev. Four segments		
5.	5	5	[a] 11.60			London, Fellows; *BMC* 48; *Gr. M.*, 1890.14, no 28; *Traité* 1910; *NC* 1923, 138
			[b] 12.29			Boston; *Warren* 966; *Brett*, 1289
Rev. Four segments						
6.	5	6	12.16			Mkt.; *Hirsch* 87 (1974) 127; *MuM* 76 (1991) 726
7.	6	7	12.09			Mkt.; *MuM* 8 (1949) 835; 76 (1991) 726
8.	6	8	11.83			New York
9.	6	9	[a] 11.25			New York, Meletopoulos 1895; *Weber*, 4640; *Naville* 4 (1922), 645
			[b] 11.53			Paris; *Traité*, 1910 (O. possibly recut)
10.	6	10	11.82			London, Josi 1837
11.	6	11	11.79			Brussels; *Rollin-Feuardent* 10/12/1880, 80; Naster, 1396
12.	7	12	11.17			Pozzi 2018; *Boutin*, 4508; *Naville* 1 (1920) 2018; Bourgey 17-19 (1959), 393 (same reverse as 11?)
Rev. Diagonal cross						
13.	8	13	12.12			London; *BMC*, 49; *Gr. M.*, 1890:14; *Traité* 1919
14.	9	14	12.03			Mkt.; *Giessener* 69 (1994) 2 56

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Drachms						
Obv. Fish r. ascending			Rev. Four segments			
15.	10	15	[a] 5.61			Berlin, Prokesch-Osten
			[b] 6.01			Paris; *Traité*, 1911
16.	10	16	5.02			Munich
Rev. St George cross						
17.	11	17	5.83			London; *BMC*, 50; *Traité*, 1918
Hemidrachms						
Obv. ϘO, fish r. ascending			Rev. Five segments			
18.	12	18	2.79			Berlin, Prokesch-Osten (fish not visible)
19.	13	18	2.61			New York; Weber, 4642; *Naville* 4 (1922), 646
20.	14	19	–			Strasbourg 2600 (maybe the same R. die)
Rev. Four segments						
21.	15	20	2.27			Berlin, Prokesch-Osten
22.	16	21	2.88			Berlin; *Gr. M.*,.1890.15, no 32; *Traité* 1916
23.	17	22	2.76			Harvard; *Hamburger* 11-12/6/1930; *SNG Lockett* 2611; *NCir* 1960, 9411; *Dewing*, 1952
Rev. Diagonal cross						
24.	17	23	2.91			London, *BMC*, 52; *Traité*, 1920
25.	18	24	2.37			Bemment, 1326; *Naville* 7 (1924), 1326; *Bourgey* 17/19/1959, 394; *Glendining* 12/1963, 289; *Leu* 45 (1988), 177
Obols						
Obv. Dolphin r. ascending			Rev. Four segments			
26.	19	25	[a] 0.98			Berlin; *Gr. M.*, 1890.15, no 33
			[b] 0.97			Paris
			[c] 0.78			London, Maurogordato
			[d] 1.04			New York
			[e] 0.86			London, Borrell; *BMC*, 53
			[f] 0.85			Paris; *Traité*, 1917
			[g] 1.03			Munich
			[h] 0.70			Athens
			[i] 1.02			Copenhagen; *SNG Cop*, 639 (dolphin out of flan)
			[j] 0.99			Paris
27.	19	26	[a] 0.81			Dresden 1618
			[b] 0.99			Paris
			[c] 0.92			Saint Petersberg
28.	20	26	[a] 0.90			Athens 476a
			[b] 0.92			Munich
29.	21	26	1.11			Munich
30.	22	27	0.95			Paris

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Rev. Diagonal cross						
31.	22	28	[a] 0.84			Berlin, Prokesch-Osten (overstruck)
			[b] 0.73			Mkt.; Sotheby March 1897, 233 (Montagu 2); *Naville* 1 (1921) 2019; Weber 4643
			[c] 1.01			London; *BMC*, 54
			[d] 0.85			Copenhagen; *SNG Cop*, 638
			[e] 0.85			Saint Petersberg 32724
Rev. St. George cross						
32.	23	29	0.86			Berlin, Löbbecke 1906
33.	24	30	0.80			Berlin

Series III. *AR* *Obv. Dolphin, ϘO* *Rev. Blank, or incuse or K within incuse*

Hemiobols						
Rev. Blank						
34.	25	–	[a] 0.48			London; *BMC*, 56
			[b] –			Thorvaldsen; *Müller*, 104
			[c] 0.41			Berlin, Imhoof-Blumer
Rev. Four segments						
35.	25	31	[a] 0.36			London; *BMC*, 55
			[b] 0.46			Munich
			[c] 0.27			Paris; *Traité*, 1090
36.	25	32	0.42			Hague 4841
Rev. K in an incuse (no die linkage provided)						
37.	–	–	[i] 0.35			London
			[ii] 0.29			London, Woodhouse; *Gr. M.*, 1890. 15, no 34
			[iii] 0.16			Berlin, Imhoof-Blumer
			[iv] 0.35			London, Oman 1947
			[v] 0.20			Berlin, Fox
			[vi] 0.33			Copenhagen; *SNG Cop*, 640
			[vii] 0.29			Copenhagen; *SNG Cop*, 641
			[viii] 0.26			Paris; *Traité*, 1090, pl. 32.19
			[ix] 0.25			Berlin 22847
			[x] 0.29			Berlin 2866, Löbbecke
			[xi] 0.30			Tübingen; *SNG Tüb*, 2013
			[xii] 0.33			Keckman Coll.; *SNG Finland* 1, 284
			[xiii] 0.24			Weber; *Forrer*, 4644
Overstruck Aeginetan staters						
38.			11.98			Copenhagen; *SNG Cop*, 637
39.			11.98			Weber 4641; *Lambros* 1887; *Sotheby* 1/2/1984 147 (Brand Sale 5)
Overstruck Koresian staters						
40.			12.09			Athens; Myrina Hoard; *Essays Thompson*, 231-239, no 49

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Doubtful						
I.			11.80			Berlin; *Gr. M.*, 27; *ZfN* 1910, 357; *Traité* 1914
Series IV.		*AE*	*Obv. Cuttlefish*	*Rev. Grape, K O*		
41.	26	33	1.57	(12)	11	London, Woodhouse; *BMC*, 60
42.	27	34	[a] 1.22	(2)	12	London
			[b] 1.38	(5)	12	Athens 4746c
			[c] 1.63	(1)	11	Paris
43.	28	34	1.20	(12)	10	Paris, Boutin Coll. 386
44.	28	35	1.52	(3)	12	Berlin, Imhoof-Blumer
45.	28	36	1.02	(6)	10	New York
46.	28	37	[a] 1.47	(6)	12	Paris
			[b] 1.00	(12)	11	New York
47.	28	38	1.30	(6)	11	Paris, Boutin Coll. 388
48.	29	37	1.19	(11)	12	Athens 4748
49.	30	39	1.05	(2)	10	Berlin, Fox
50.	31	39	1.36	–	11	Kärnten 22476b
51.	31	40	2.10	(4)	11	Oxford, Sabin Gall. 1960
52.	32	40	1.47	(1)	12	Paris, Boutin Coll. 387
53.	31	41	[a] 1.96	(1)	12	Athens
			[b] 1.91	(4)	10	Berlin, Fox
			[c] 2.50	–	11	Munich
54.	33	41	1.61	(6)	11	Karlsruhe
55.	34	42	2.32	(12)	12	Copenhagen; *SNG Cop*, 642
56.	35	43	2.31	(4)	11	Paris
57.	36	44	1.40	(5)	10	London; *BMC*, 62
58.	37	45	–	–	–	Winterthur; Bloesch, 2304
Series V.		*AE*	*Obv. Apollo r.*	*Rev. Grape bunch; r. bee; l. N, star, KOPH*		
59.	38	46	3.50	(5)	18	London, Woodhouse; *BMC*, 63
60.	38	47	3.47	(5)	17	Berlin, Fox
61.	38	48	3.41	(3)	16	Paris
62.	38	49	[a] 3.44	(5)	18	Berlin, Imhoof-Blumer
			[b] 3.20	(10)	18	London; *BMC* Tenos, 26
63.	38	50	3.20	(5)	17	London, Bank Coll.; *BMC*, 65
64.	38	51	[a] 3.19	(5)	18	New York
			[b] 3.75	(11)	19	Munich
			[c] 3.13	(5)	15	Oslo, *Thomsen* 1238
65.	39	49	4.50	(12)	17	Berlin 28784
66.	39	50	5.01	–	19	Munich
67.	39	51	2.93	(10)	16	London; *BMC*, 64

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series VI.		*AE*	*Obv. Apollo r.*	*Rev. Bee, KO PH*		
68.	40	52	6.57	(11)	10	Athens KI 1913-14
69.	40	53	6.61	(11)	21	London; *BMC*, 66
70.	40	54	7.18	(11)	20	New York
71.	40	55	[a] 6.56	(12)	20	Berlin, Löbbecke
			[b] 5.72	(12)	18	Paris
72.	41	55	6.55	(12)	19	Copenhagen; *SNG Cop*, 643
73.	41	56	5.45	(12)	20	Oxford, J. G. Milne
74.	41	57	–	(12)	21	Thorvaldsen; *Müller*, 796
75.	41	58	[a] 6.12	–	20	Glasgow; *McDonald*, 1
			[b] 5.22	(12)	19	Berlin, Old Collection
76.	41	59	[a] 5.62	(12)	19	Cambridge; *Leake, Num. Hel.*, 12.20
			[b] 4.45	(11)	18	Stuttgart MK 17976
77.	42	58	5.46	(12)	20	Berlin, Ross
78.	43	60	5.37	(12)	19	Paris, Boutin Coll. 389
79.	44	61	7.18	(12)	19	Hague 4842 (O. countermark: female head)
80.	45	62	5.61	(12)	20	Cambridge, Leake
81.	46	63	3.84	(12)	19	New York
82.	47	64	4.30	–	19	Copenhagen (O. same countermark as 79; female head)
83.	48	65	4.71	(12)	19	Aarhus; *SNG Aarhus*, 689
Series VII.		*AE*	*Obv. Aristaeus r.*	*Rev. 8-rays star; between the rays, KOPH, ⊙ or ΨO*		
84.	49	66	2.01	–	13	Munich
85.	49	67	1.04	(9)	13	Berlin, Imhoof-Blumer
86.	49	68	[a] 1.64	(3)	14	Berlin, Fox
			[b] 1.88	(4)	13	Berlin, Prokesch-Osten
87.	49	69	1.54	–	13	Paris, Boutin Coll. 385
88.	49	70	1.41	–	13	Paris, Boutin Coll. 379
89.	49	71	1.81	(5)	13	London, Maurogordato
90.	49	72	2.69	(4)	15	Berlin, Old Collection
91.	49	73	[a] 1.71	(10)	13	London; *BMC*, 59
			[b] 1.81	(9)	13	Stuttgart MK 17977
92.	49	74	2.05	–	13	New York (between the rays OΨ)
93.	50	74	2.21	(11)	13	Paris
94.	50	75	2.41	(7)	11	London; *BMC*, 58
95.	51	74	2.12	–	13	London, Borrel; *BMC*, 57
96.	51	76	2.43	–	13	Paris, Boutin Coll. 390
97.	52	75	2.13	(3)	13	Berlin, Fox
98.	53	77	1.92	(10)	12	Copenhagen; *SNG Cop*, 644
99.	54	78	1.54	(3)	13	Copenhagen; *SNG Cop*, 645

MINT OF IOULIS

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series I.		*AR*	*Obv. Grape bunch*	*Rev. Incuse square* *		
Hemidrachms						
i			2.59			London; *BMC* Karthaia, 24
ii			2.44			Berlin, Imhoof-Blumer
iii			3.08			Berlin, Imhoof-Blumer, 39
Trihemiobol						
iv			1.47			Prowe; *Egger* (1904), 838
Obols						
v			0.82			New York
vi			0.81			London; *BMC* Karthaia, 30
vii			1.00			London; *BMC* Karthaia, 28
viii			1.04			Berlin, Imhoof-Blumer
ix			0.86			Berlin, Imhoof-Blumer 18
x			0.85			Berlin, Prokesch-Osten
xi			0.68			Paris; *Traité*, 1889
xii			0.92			Berlin, Fox
xiii			0.84			London; *BMC* Karthaia, 29
xiv			0.87			Copenhagen; *SNG Cop*, 646
xv			0.81			Munich
xvi			0.65			Munich
xvii			0.63			London; *BMC* Karthaia, 31
xviii			0.87			Tübingen; *SNG Tüb*, 2010
xix			0.78			London; *BMC* Karthaia, 32
xx			0.72			Munich
xxi			0.70			London, Burgon 1841; *BMC* Karthaia, 37
xxii			0.68			London, *BMC* Karthaia, 32
xxiii			0.74			Munich
Hemiobols						
xxiv			0.54			Stuttgart MK 17975
xxv			0.55			Munich
xxvi			0.35			Paris

* Dr Sheedy suggests that those coins which show a grape bunch only do not belong to Ioulis. Nevertheless, I think that, many of them, can still be attributed to that city. Thus, I provide a catalogue of them, without numbers and die linkage, in order not to disturb our common catalogue.

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series II.		*AR*	*Obv. Grape bunch, dolphin.*	*Rev. Incuse square*		
Staters						
Obv. Dolphin ascending l.			Rev. Union Jack			
1.	1	1	12.14			Copenhagen; *SNG Cop*, 647; *Gr. M.*, 43; *Traité* 1893; *Seltman* 1926. 138, pl. 7.7
Rev. Four segments						
2.	2	2	11.90			Torino ; *Gr. M.*, 44; *Traité*, 1894
Obv. Smaller bunch to l. dolphin descending r. Rev. Four segments						
3.	3	3	12.26			Boston; Brett, 1286; NC 1893, 87; Traité 1896 Warren 967
Rev. Five segments						
4.	3	4	11.63			Paris; *Gr. M.*, 45; *Traité*, 1895
Rev. Four segments						
5.	4	5	11.86			Berlin; *Froehner*, 1371; *Gr. M.*, 45; *Traité*, 1896 (overstruck)
Drachm						
Obv. Smaller bunch l.; dolphin descending r. Rev. Four segments						
6.	5	6	5.69			London; *BMC* Karthaia, 34; *Gr. M.*, 46; *Traité* 1897
Hemidrachms						
Obv. Dolphin ascending r. Rev. Four segment						
7.	6	7	[a] 2.84			London, Borrell; *BMC* Karthaia, 35; *Gr. M.*, 47; *Traité* 1898 (overstruck)
			[b] 2.64			Harvard; *Dewing*, 1953; Spink 1929
Trihemiobols						
Rev. Four segments						
8.	7	8	[a] 1.40			Paris; *Gr. M.*, 48; *Traité*, 1899
			[b] 1.10			Berlin, Prokesch-Osten; *Gr. M.*, 44; *Traité*, 1894
Obols						
Obv. Dolphin ascending l. Rev. Four segments						
9.	8	9	[a] 0.89			Berlin, Fox
			[b] 1.01			London; *BMC* Karthaia, 36
			[c] 0.91			London, Maurogordato
			[d] 0.85			Paris
			[e] 0.86			Weber; *Forrer*, 4646
			[f] 0.95			Tübingen; *SNG Tüb*, 2011
			[g] 0.95			Berlin; *Gr. M.*, 51
			[h] 1.01			Copenhagen; *SNG Cop*, 648
			[i] 0.94			Paris

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Obv. Dolphin descending r. Rev. Four segments						
10.	9	10	[a] 0.82			Berlin; *Gr. M.*, 42
			[b] 0.99			Kärnten 2243
			[c] 1.02			Munich; *Gr. M.*, 51; *Traité*, 1903
			[d] 0.97			Berlin; *Gr. M.*, 49
			[e] 0.90			Copenhagen; *SNG Cop*, 649
			[f] 0.88			Cambridge; *SNG Leake*, 4010
			[g] 0.92			Cambridge; *SNG Leake* 4009
			[h] 0.80			Cambridge; *Grose*, 7242
Rev. St. George cross						
11.	9	11	0.70			London, *Burgon* 1841; *BMC* Karthaia, 37
12.	10	12	0.85			New York
13.	11	13	0.95			Paris; *Traité*, 1900
Hemiobol						
14.	12	14	0.46			Berlin, Dannenberg
Series III.		*AR*	*Obv. Dolphin, small grape bunch*		*Rev. Incuse or blank*	
Hemiobols						
Obv. Dolphin descending r., grape bunch l. Rev.Thin diagonal cross						
15.	13	15	0.53			Paris; *Gr. M.*, 53; *Traité*, 1905
16.	14	16	0.50			Munich; *Gr. M.*, 53
Obv. Small grape bunch; dolphin ascending r. Rev. Blank						
17.	15	–	[a] 0.34			Berlin; *Gr. M.*, 54; *Traité* 1906
			[b] 0.49			London, Bank Coll. 370; *BMC* Karthaia, 38
			[c] 0.47			Paris; *Gr. M.*, 54; *Traité*, 1906
Series IV.		*AR*	*Obv. Zeus-Aristaeus r.*		*Rev. Bee; l. head of Sirius. In a pointed circle*	
Issue 1.						
18.	16	17	6.53	–	20	Berlin; *Prokesch-Osten*, 109,Pl. III
19.	17	18	7.45	(12)	19	Berlin, Fox (R. ΓΛΑΥ)
Issue 2.		Rev. IOY and a silphium bunch (flower)				
20.	18	19	8.35	(5)	18	Paris
21.	18	20	7.85	(6)	18	London; *Froehner*, 1375 (possibly the same R. die)
Doubtful						
I.			8.50	(2)	21	Paris
Series V.		*AE*	*Obv. Zeus-Aristaeus r.*		*Rev. Bee*	
22.	19	21	5.03	(12)	15	Berlin, Löbbecke

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series VI.			*AE Obv. Aristaeus or Apollo r. Rev. Bunch of grapes, (I)OY K(E)*			
Issue 1.						
23.	20	22	3.09	(2)	14	Athens 474/A
24.	20	23	2.24	(6)	14	New York (same O. as KEIΩN 10)
Issue 2.						
25.	21	24	1.22	(6)	11	Cambridge
Issue 3.						
26.	22	25	0.94	(11)	9	Paris (O. Apollo)
Series VII.			*AE Obv. Apollo laureate r. Rev. Bee*			
Issue 1.			Rev. IOY ΛI.			
27.	23	26	[a] 4.76	(12)	18	Berlin, Fox
			[b] 5.81	(9)	17	London, Woodhouse
28.	23	27	5.14	(12)	17	Berlin, Prokesch-Osten
29.	23	28	[a] 4.85	(5)	17	Paris, Boutin 381
			[b] 6.50	–	18	Munich
			[c] 5.63	(6)	19	Paris
			[d] 5.83	(6)	19	Oxford
30.	23	29	5.89	(12)	19	Berlin, Imhoof-Blumer
31.	23	30	5.20	(12)	18	Berlin, Löbbecke
Issue 2.			Obv. Different rendering of the head.			Rev. IOY in two different arrangements
32.	24	31	[a] 3.93	(12)	14	Berlin, Imhoof-Blumer
			[b] 4.89	(11)	15	Paris
			[c] 4.22	(12)	15	Cambridge; *Grose*, 7249
33.	24	32	3.52	(11)	17	Paris
34.	24	33	4.04	(12)	17	Cambridge; *Leake, Num. Hel.* 23. 15
35.	25	32	3.46	–	16	Kärnten 2249
36.	25	34	5.10	(12)	17	London, Maurogordato
37.	26	35	3.77	(12)	15	Copenhagen; *SNG Cop*, 657
38.	27	36	4.49	–	16	Kea, from Poiessa
39.	28	37	[a] 3.70	(12)	16	Berlin, Imhoof-Blumer
			[b] 5.00	(12)	16	Berlin, Löbbecke
			[c] 4.00	(2)	18	London, Earl Fox
			[d] 4.09	–	19	Munich
40.	28	38	[a] 3.55	(12)	16	Berlin 28704
			[b] 3.48	(11)	19	Athens
			[c] 3.80	(11)	16	Paris

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Issue 3.		Rev. IOY				
41.	29	39	[a] 2.11	(12)	11	Paris, Boutin 402
			[b] 2.51	(12)	11	Berlin, Ross
42.	29	40	3.00	–	13	Munich
43.	29	41	2.70	(11)	15	London, Burgon 1841; *BMC*, 68
44.	29	42	[a] 2.27	(11)	14	London, Hawkins 1814-24; *BMC*, 67
			[b] 2.20	–	13	Munich
45.	29	43	[a] 3.01	(12)	13	Oxford, New College
			[b] 2.79	(11)	12	Paris
			[c] 3.12	(11)	13	Oslo, Christiansen
			[d] 2.99	(12)	14	Cambridge, Leake
46.	29	44	2.02	(12)	12	Berlin, Fox
47.	30	44	2.65	(1)	14	Athens
48.	30	45	3.04	(11)	12	Paris, Lockett
49.	30	46	2.56	(12)	11	Paris
50.	31	47	2.77	(12)	12	Copenhagen; *SNG Cop*, 658
Series VIII.		*AE Obv. Apollo laureate r. Rev. Sirius, IOY*				
Issue 1.		Sirius l.				
51.	32	48	[a] 1.87	(11)	13	Athens, Credit Bank; *Walker*, 764M
			[b] 2.14	(5)	14	London
			[c] 2.26	(12)	14	Berlin, Ross
			[d] 2.32	(6)	12	Berlin, Löbbecke
			[e] 1.59	(6)	13	Cambridge; *Grose*, 7246
52.	32	49	[a] 2.35	(12)	12	Berlin, Ross
			[b] 2.10	(4)	11	Paris
53.	32	50	2.10	(12)	12	Hague 4839
54.	33	49	3.34	(12)	13	Berlin, Prokesch-Osten
55.	32	51	2.30	(10)	12	Paris
56.	32	52	2.38	(12)	12	Paris, Boutin 393
57.	32	53	3.04	(12)	14	New York
58.	34	53	–	–	–	Thorvaldsen; *Müller*, 784
59.	32	54	2.22	(11)	13	Paris
60.	35	51	1.79	(6)	11	Berlin, Prokesch-Osten
61.	35	55	2.83	(10)	10	Athens, Credit Bank; *Walker*, 763M
62.	35	56	2.26	(4)	12	Berlin, Imhoof-Blumer
63.	35	57	[a] 2.12	(11)	13	London, Hawkins
			[b] 2.23	(6)	14	Cambridge; *Grose*, 7235
			[c] 1.45	(12)	13	Copenhagen; *SNG Cop*, 650
64.	35	58	2.29	(3)	15	New York
65.	35	59	1.57	(12)	11	New York
66.	36	59	2.15	–	12	Munich
67.	37	60	1.98	(2)	13	Hague 4838
68.	38	61	2.42	–	14	Vienna, Stiftes-Schotten

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Issue 2.		*Sirius r.*				
69.	39	62	[a] 1.78	(12)	11	Berlin, Old Collection
			[b] 1.50	(2)	11	Paris
			[c] 1.58	(10)	12	Berlin, Fox
70.	40	62	1.10	(4)	13	London; *BMC*, 13
71.	40	63	1.51	(12)	13	Athens IB'I 556, Tsivourakis
72.	40	64	1.82	(5)	12	Berlin, Ross
73.	40	65	2.10	(12)	12	Berlin, Ross
74.	41	66	–	–	–	Glasgow; *McDonald*, 4
75.	42	67	2.10	(5)	12	Athens IB'I 559
76.	43	68	–	–	11	Thorvaldsen; *Müller*, 785
77.	44	69	2.26	(2)	11	London, Spink, Weber
78.	45	70	–	–	–	Berkeley 8.4792
Series IX.		*AE*	*Obv. Aristaeus r.*	*Rev. 8-rays star, between the rays IOY*		
79.	46	71	1.44	–	13	Berlin, Knobelsdorf
80.	47	72	[a] 1.78	–	11	Paris
			[b] 3.02	–	11	Munich
81.	47	73	1.33	–	10	Munich
Series X.			*AE Obv. Aristaeus r., in a pointed circle.*	*Rev. Bee, IOY or IOYΛI*		
Issue 1.		Rev. IOY				
82.	48	74	[a] 3.66	(2)	13	Oxford
			[b] 3.24	(2)	14	Oxford
			[c] 3.77	(12)	14	Oxford
			[d] 3.44	(12)	13	New York
			[e] 3.05	–	13	Munich
			[f] 3.81	(12)	13	London; *BMC*, 81
			[g] 3.17	(2)	13	Karlsrouhe
			[h] 2.69	(12)	11	Berlin, Fox
			[i] 2.50	(12)	12	Berlin, Dannenberg
			[j] 3.18	(12)	11	Berlin, Friedlander
			[k] 3.98	(12)	12	Cambridge; *Leake, Num. Hel.*, 23.14
			[l] 3.94	(12)	12	Berlin, Prokesch-Osten
			[m] 2.97	(11)	11	Paris
			[n] 3.66	–	13	Munich
			[o] 3.02	(12)	12	Paris
			[p] 2.64	(12)	12	Hague 4844
			[q] 2.89	(12)	12	Hague 4852
			[r] 2.83	(12)	11	Aarhus; *SNG Aarhus*, 692
			[s] 3.76	(12)	13	Copenhagen; *SNG Cop*, 655
			[t] –	–	–	Strasbourg 260319
			[u] –	–	–	Vinterthur; *Bloesch*, 2303

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Issue 2.		Rev. IOYΛI, Є				
83.	49	75	[a] 4.97	(12)	15	Athens, Credit Bank; *Walker*, 765M
			[b] 2.88	(12)	14	New York
			[c] 2.94	(12)	15	New York
			[d] 3.66	(12)	16	London, Earle Fox
			[e] 3.18	(12)	15	Paris, Boutin 401
			[f] 3.97	(12)	13	Paris
			[g] 3.93	(12)	15	London; *BMC*, 79
			[h] 3.93	(12)	14	Berlin, Imhoof-Blumer
			[i] 3.20	(12)	15	Cambridge; *Leake, Num. Hel.*, 23.12
84.	50	75	[a] –	–	15	Thorvaldsen; Müller, 786
			[b] 3.44	(12)	15	Oslo, Danish Royal Coll.
			[c] 4.32	(12)	15	Paris, Boutin 396
			[d] 3.50	(12)	14	Paris
			[e] 4.13	(12)	15	Berlin, Prokesch-Osten
			[f] 2.32	(12)	14	Berlin, Löbbecke
			[g] 3.01	(12)	15	London; *BMC*, 82
			[h] 4.21	(12)	15	Berlin, Fox
			[i] 3.80	(12)	16	London, Thomas; *BMC*, 78
			[j] 3.21	(12)	14	Berlin
			[k] 2.80	(12)	14	Oxford
			[l] 3.28	(12)	14	Copenhagen; *SNG Cop*, 656
			[m] 4.31	(12)	14	Paris
			[n] 3.48	–	15	Munich
			[o] 2.98	–	–	Glasgow; *McDonald*, 2
			[p] 2.20	–	–	Glasgow; *Mc Donald*, 3
			[q] 2.72	–	15	Munich
			[r] 4.11	(12)	14	Hague 4851
			[s] 3.82	(12)	14	Cambridge; *Leake, Num. Hel.*, 23.13
			[t] 2.68	(12)	15	Cambridge; *Grose*, 7248
Issue 3.		Rev. IOYΛI and monogram ⧫				
85.	51	76	2.67	(12)	15	London, Payne Knight; *BMC*, 80
86.	52	76	1.79	–	14	Munich
87.	52	77	[a] 1.78	–	14	Munich
			[b] 1.90	(1)	13	Paris
			[c] 2.19	–	14	Munich
88.	52	78	1.51	(12)	11	Paris, Delepierre
89.	52	79	1.92	(12)	13	London; *BMC*, 83
90.	53	77	2.04	(12)	14	Oxford
91.	53	79	1.97	(12)	12	Paris
92.	53	80	1.76	–	14	London, Earle Fox
93.	53	81	1.94	–	–	Glasgow; *McDonald*, 4
94.	54	82	2.18	(12)	13	Paris

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Issue 4.		Rev. IOY				
95.	55	83	1.02	(12)	10	Oxford
96.	55	84	1.44	(12)	11	Berlin, Prokesch-Osten
97.	55	85	1.07	(12)	10	Berlin, Prokesch-Osten
98.	56	86	0.72	–	8	Munich
99.	57	87	0.40	(12)	9	Berlin, Rauch
100.	58	88	1.26	(12)	10	Cambridge; *SNG Leake*, 4011
Series XI.		*AE Obv. Ktesylla r. Rev. Grape bunch, IOYΛI*				
Issue 1.		Rev. IOYΛI, ⏀				
101.	59	89	[a] 5.77	(12)	18	Copenhagen; *SNG Cop*, 652
			[b] 4.00	(12)	17	Paris
102.	59	90	4.36	(12)	20	Berlin, Prokesch-Osten (overstruck)
103.	59	91	[a] 3.30	(12)	17	Berlin, Imhoof-Blumer
			[b] 4.78	(12)	17	Berlin, Knobelsdorf
Issue 2.		Rev. IOYΛI, Є				
104.	60	92	[a] 5.49	(12)	15	Berlin, Löbbecke
			[b] 5.92	(12)	18	London; *BMC*, 75
105.	60	93	[a] 4.18	(1)	16	Athens
			[b] 5.46	(1)	15	Paris
			[c] 5.55	(12)	17	Copenhagen; *SNG Cop*, 651
106.	61	94	3.37	(12)	15	Aarhus; *SNG Aarhus*, 690
Issue 3.		Rev. IOYΛI				
107.	62	95	[a] 4.81	(12)	15	Cambridge, Leake
			[b] 3.72	(12)	16	Paris, Boutin 394
			[c] 4.90	(12)	16	Paris, Boutin 395
108.	62	96	[a] 4.40	(12)	16	London, Woodhouse; *BMC*, 77
			[b] 5.63	(12)	16	London, Payne Knight; *BMC*, 76
			[c] 4.71	(6)	16	Oxford
			[d] 3.92	(12)	17	Paris
109.	62	97	[a] 4.28	(12)	16	Berlin 8670
			[b] 4.55	–	17	Munich
			[c] 5.46	(12)	16	Cambridge; *Leake, Num. Hel.*, 23.18
			[d] 5.77	(12)	16	Berlin, Rauch
			[e] 5.74	(12)	15	Paris
			[f] 5.25	(12)	15	Paris
			[g] 5.13	(11)	15	Berlin, Prokesch-Osten
110.	62	98	5.05	–	–	Glasgow; *McDonald*, 1
111.	63	99	–	–	–	Strasbourg 260/13

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series XII.		*AE*	*Obv. Ktessylla r.*	*Rev. Bee, IOY; the whole in a wreath*		
112.	64	100	[a] 2.29	(12)	10	Paris
			[b] 2.02	–	12	Kärnten 2251
			[c] 1.86	(11)	10	Paris
			[d] 1.96	–	11	Munich
			[e] 2.30	–	11	Munich
			[f] 2.61	(12)	11	Paris
			[g] 2.24	(11)	11	NewYork
			[h] 2.31	(12)	12	Berlin 8832
			[i] 1.12	(12)	10	Berlin, Ross
			[j] 1.35	(12)	11	Berlin 8675
			[k] –	(11)	11	Thorvaldsen; *Müller*, 790
			[l] 2.36	(12)	11	Berlin, Knobelsdorf
			[m] 1.49	(11)	10	Paris, Delepierre
			[n] 1.75	(12)	11	Hague 4849
			[o] 2.60	(12)	14	Oslo
113.	65	101	1.26	(12)	12	Berlin, Prokesch-Osten
114.	66	101	[a] 1.76	(12)	10	Berlin 10408
			[b] 0.70	–	11	Munich
115.	66	102	[a] 1.33	(12)	11	Berlin, Imhoof-Blumer
			[b] 1.32	(12)	11	Berlin, Löbbecke
116.	67	103	1.46	(2)	10	Paris
117.	68	104	[a] 1.16	(7)	11	Oxford
			[b] 1.01	(12)	10	Hague 4847a
118.	69	104	[a] 1.39	(12)	11	Berlin, Prokesch-Osten
			[b] 1.02	(2)	10	Paris
119.	69	105	1.34	(7)	10	Karlsrouhe
120.	70	104	0.97	(2)	10	London, Burgon 1841; *BMC*, 73
121.	71	104	0.99	(12)	11	New York
122.	71	106	1.04	(12)	10	New York
123.	72	106	[a] 0.76	(1)	11	Paris
			[b] 0.85	(12)	11	Berlin, Ross
			[c] 1.02	–	11	Hague 4845
124.	73	104	1.67	(1)	10	Berlin, Rauch
125.	73	107	[a] 1.37	(2)	10	Oxford
			[b] 1.18	(12)	11	Berlin 8257
			[c] 1.33	(12)	11	Berlin, Fox
			[d] 1.36	(2)	9	Paris
			[e] 0.93	–	–	Munich
			[f] 0.98	(8)	11	Karlsrouhe
126.	73	108	1.70	–	11	Munich
127.	74	105	[a] 1.05	–	10	Munich
			[b] 1.05	(12)	9	Athens
			[c] 1.13	(6)	9	Berlin, Fox
			[d] 0.98	(7)	11	London; *BMC*, 74

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
			[e] 1.00	(12)	10	Berlin, Imhoof-Blumer
			[f] 1.30	(6)	9	Berlin, Prokesch-Osten
			[g] 1.44	(6)	10	Cambridge; *Grose*, 7247
128.	74	109	0.71	(7)	10	Oxford
129.	75	105	[a] 0.86	(6)	9	Paris
			[b] 0.97	(6)	10	New York
130.	75	110	[a] 0.86	(9)	9	Paris
			[b] 1.03	(9)	9	Paris, Delepierre; *Wiczay*, 4338
			[c] 1.09	(11)	8	London; *BMC*, 71
			[d] 1.05	(9)	10	Berlin, Ross
			[e] 2.15	(10)	9	London; *BMC*, 72
131.	75	111	–	(3)	8	Thorvaldsen; *Müller*, 791
132.	76	111	1.04	10	8	Paris
133.	77	112	–	(10)	10	Thorvaldsen; *Müller*, 788
134.	78	112	[a] 1.06	(6)	10	Paris
			[b] 1.58	(1)	10	Paris
135.	78	113	1.54	–	10	Munich
136.	78	114	1.17	(12)	10	Berlin, Ross
137.	78	115	–	–	11	Thorvaldsen; *Müller*, 789
138.	78	116	1.08	–	11	Munich
139.	79	117	0.86	–	10	Berlin, Knobelsdorf
140.	80	118	[a] 1.25	(2)	11	Cambridge; *Leake, Num. Hel.*, 23.19
			[b] 1.16	(12)	10	Cambridge; *Leake, Num. Hel.*, 23.20 I
			[c] 1.18	(2)	10	Cambridge; *Leake, Num. Hel.*,23.20 II
141.	81	119	[a] 1.19	(6)	10	Hague 4847
			[b] 0.99	(2)	10	Aarhus; *SNG Aarhus*, 691
142.	82	120	1.03	(3)	9	Cambridge, Leake
143.	83	121	1.02	(2)	11	Oslo
144.	84	122	[a] 1.01	(10)	10	Hague 4846
			[b] 1.02	–	7	Hague 4848
145.	85	123	1.09	(4)	11	Hague 4850
146.	86	124	0.88	(12)	10	Copenhagen; *SNG Cop*, 659
147.	87	125	1.16	–	11	Hague 4850a
Series XIII.			*AE Obv. Apollo r. Rev. IOY in a wreath*			
148.	88	126	[a] 1.22	(9)	12	Berlin, Rausch
			[b] 1.22	–	12	Paris
			[c] 1.14	(9)	11	Berlin, Imhoof-Blumer
149.	89	127	1.91	(2)	10	Berlin, Löbbecke (Apollo l.; Rev. overstruck)
Series XIV.			*AE Obv. Bachus r. Rev. Bunch of grapes, IOY*			
Issue 1.						
150.	90	128	0.91	(10)	8	Paris
151.	90	129	0.97	–	9	Munich

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
152.	90	130	0.83	–	10	Kärnten 2252
153.	91	128	[a] 0.76	(9)	9	Cambridge; *Leake, Num. Hel.*, 23.16
			[b] 0.86	(9)	10	Copenhagen; *SNG Cop*, 653
			[c] 0.84	(9)	10	London, Bank Coll. 374; *BMC*, 69
			[d] 0.71	–	10	Munich
			[e] 0.95	(3)	10	Oxford
			[f] 0.96	(9)	9	Berlin, Imhoof-Blumer
154.	91	129	[a] 0.76	(12)	7	Paris
			[b] 0.95	(7)	10	London, Burgon 1841; *BMC*, 70
			[c] 0.69	(12)	10	Berlin, Imhoof-Blumer
			[d] 0.93	(12)	9	Cambridge; *Leake, Num. Hel.*, 23.17
155.	91	130	0.55	–	9	Munich
156.	91	131	[a] 1.03	(3)	10	London, Maurogordato
			[b] 0.79	(3)	9	Oslo, Danish Royal Coll.
157.	91	132	[a] 0.77	(12)	9	Berlin, Ross
			[b] 0.78	(12)	8	Berlin, Knobelsdorf
158.	91	133	–	–	10	Delos, F 431 (62-C-41)6 *DEA XX VII*, 397, Pl. 67
Issue 2.						
159.	92	134	[a] 1.10	(12)	11	Berlin, Prokesch-Osten
			[b] 1.39	(12)	12	Berlin, Prokesch-Osten
			[c] 0.93	–	11	Munich
			[d] 1.31	–	10	Munich
160.	92	135	0.97	(12)	10	Berlin, Ross
161.	92	136	1.10	–	11	Munich
162.	92	137	0.85	(12)	10	Berlin, Rauch
163.	92	138	1.77	(12)	11	Copenhagen; *SNG Cop*, 654
Series XV.			*AE Obv. Dionysos r. Rev. Grape bunch, IOY*			
164.	93	139	[a] –	–	11	Athens, from Pella
			[b] 4.05	(12)	12	Berlin, Prokesch-Osten
165.	94	139	5.08	(12)	13	Berlin, Knobbelsdorf
Series XVI.			*AE Obv. Bunch of grapes, IOY Rev. Bunch of grapes, IOY*			
166.	95	140	0.93	(9)	8	New York (same O. die used as R.?)
167.	96	141	0.56	(4)	8	Karlsrouhe
Series XVII.			*AE Obv. Bee Rev. Star, (IOY)*			
Issue 1.			8-rays star.			
168.	97	142	[a] 1.66	–	11	Munich
			[b] 1.47	–	9	Berlin, Löbbecke
169.	98	142	[a] 1.33	–	10	Berlin, Imhoof-Blumer
			[b] 1.13	–	10	Munich
			[c] 2.12	–	9	Berlin, Ross
			[d] 1.25	–	9	Berlin, Imhoof-Blumer

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
			[e] 1.46	–	11	London; *BMC*, 84
			[f] 1.24	–	10	New York
170.	99	142	[a] 1.47	–	10	Berlin, Löbbecke
			[b] 1.04	–	10	Berlin, Rauch
			[c] 0.84	–	10	London, Woodhouse; *BMC*, 85
			[d] 1.27	–	9	Berlin, Ross
			[e] 1.25	–	10	Paris
			[f] –	–	10	Thorvaldsen; *Müller*, 792
			[g] 1.12	–	10	Berlin 11494
			[h] 1.19	–	10	New York
			[i] 1.11	–	10	Paris, Boutin 392
			[j] 0.96	–	9	Paris, Boutin 397
			[k] 1.44	–	10	Cambridge, Leake
			[l] 1.60	–	10	Cambridge; *Grose*, 7245
171.	100	143	[a] 1.23	–	10	Cambridge; *Grose*, 7244
			[b] 1.61	–	9	Tübingen; *SNG Tüb*, 2012
			[c] 1.61	–	10	Hague 4853
172.	101	144	–	–	–	Strasbourg 260318
173.	102	145	1.01	–	10	Hague 4855
174.	103	146	–	–	–	Strasbourg 2603/12
175.	104	147	1.15	–	9	Copenhagen; *SNG Cop*, 660
Issue 2.		6-rays star, IOY				
176.	105	148	[a] 0.79	–	9	London, Maurogordato
			[b] 0.62	–	9	Munich
			[c] 0.78	–	8	Hague 4854
177.	105	149	–	–	8	Thorvaldsen; *Müller*, 793
Issue 3.		5- rays star, IOY				
178.	106	150	[a] 1.03	–	10	Cambridge; *Grose*, 7243
			[b] 0.70	–	9	Munich
			[c] 0.94	–	9	Berlin, Ross
179.	106	151	[a] 0.89	–	10	Kärnten 2248
			[b] 0.52	–	9	Paris
Issue 4.		5-rays star				
180.	107	152	[a] 0.49	–	8	Berlin, Ross
			[b] 0.59	–	8	Berlin, Imhoof-Blumer
181.	108	152	0.46	–	8	Munich
182.	108	153	[a] 0.63	–	–	Berlin
			[b] 0.76	–	9	Paris
183.	108	154	0.62	–	9	Paris
184.	108	155	0.66	–	8	Munich
185.	109	153	0.37	–	8	Paris
186.	110	154	0.93	–	9	Oxford
187.	111	155	0.47	–	8	Berlin, Prokesch-Osten
188.	111	156	[a] 0.43	–	8	Paris
			[b] 0.48	–	9	Munich

MINT OF KARTHAIA

Series I. *AR* *Obv. Amphora* *Rev. Incuse square*

Staters

R. Six part division (classification by reverse die)

1.	–	1	[a] 12.12	ex J.P. Lambros; *Hirsch* 29 (1910) 601; *de Sartiges* 325; *Leu MuM* 28.5.1974, 19; *Seltman* 1b
			[b] 12.23	Cambridge; *Grose*, 7228 (Andros)
			[c] 11.26	Berlin; *GrM* 13, no 21, pl. 1.21; *Seltman*, 1d
			[d] 12.18	Locker Lampson; *Robinson*, 246; *Naville* 1 (1921) 2013; *Boutin*, 4487; *Seltman* 1c;
			[e] 12.35	Berlin; *Paschalis* 1.4; *Seltman*, 1a
			[f] 12.03	Paris; *Traité* 1870, pl. 60.1; *Seltman* 1c
			[g] 12.33	Vienna 14899
2.	–	2	[a] 12.32	ex. King Col., Bryn Mawr *Egger* Jan. 1908, 526; *Jameson* 1277; *NC* 1956, 37, no 113; Christies (New York) 11.12.92, 113; *Seltman* 10a
			[b] 11.95	Berlin; *Paschalis* 1.9; *Seltman*, 10b
			[c] 11.71	Harvard 1972.90
			[d] 11.83	ex. London; *NC* 1884, 274, pl. 12.14; *BMC* Carthaea 15; *Paschalis* 1.5; *Naville* 5 (1923) 2292; *Leu Hess* 31 (1966) 374; *Seltman* 10d
			[e] 11.67	Berlin; *Paschalis* 1.6; *Seltman*, 10e
			[f] 12.26	ex. Rhoussopoulos; *Hirsch* 13 (1905), 3122 *Seltman*, 3a
			[g] 11.79	Oxford; *Naville* 1 (1921) 2012; *SNG Lockett* 2610; *Boutin*, 4486; *Seltman*, 10c
			[h] 12.30	ex. St. Petersburg; *Schlessinger* 13 (1935) 1083
3.	–	3	[a] 11.93	Berlin; *Paschalis* 1.2; *Seltman*, 4b
			[b] 11.13	Berlin; *Paschalis* 1.3; *Seltman*, 5a
			[c] 12.16	Goulandris Coll.; *Sotheby* March 1896, 459 (Montagu Coll.); *Sotheby* Feb. 1909, 629
			[d] –	Mkt; *Mathey* (Paris); *Seltman* 4a
4.	–	4	12.27	Boston; *Brett*, 1285; *Regling* 964; *Seltman* 6a
5.	–	5	[a] 12.36	ex. Weber; *Forrer*, 4621; *J. Hirsch* 21 (1908) 2209; *Naville* 4 (1922), 643; *Bourgey* 17-19/6/1959, 391; *Leu* 42 (1987) 256; *Seltman* 8
			[b] 12.05	London; *BMC* Karthaia 14; *Paschalis* 1.7; *Seltman*, 6c
			[c] 12.37	Berlin; *Seltman*, 6d
			[d] 12.15	ex. Pozzi; Boutin, 4488 *Naville* 1 1910)2014; *Seltman*, 7b
			[e] 12.05	ex. Philipsen; *J. Hirsch* 25 (1909) 1566; 33 (1913) 792; *Seltman* 7a
			[f] 11.87	New York

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
			[g] 11.94			Harvard; *Dewing*, 1951; *de Nanteuil* 908; *NC* 1942, 3 (said overstruck Aeginetan stater)
			[h] 12.06			New York
			[i] 12.36			New York; *H. Hirsch* 31 (1912) 437; *Bement* (1921) 227; *Naville* 7 (1924) 1324 16 (1933) 1304; *Seltman*, 7c
			[j] 12.01			Paris; *Seltman* 2
6.	–	6	12.29			Athens; *Paschalis* 1.10; *Seltman* 9
Drachm						
7.	–	7	6.11			London; *Lambros* Col. (1894) *Paschalis* 2; *Traité* 1871; *SNR* 50 (1971) 83, no 16; *Seltman*, 152, pl. 4, a;
Hemidrachms						
Rev. Six-part division						
8.	–	8	[a] 2.96			Berlin, Fox; *Paschalis* 3; *Seltman* pl. 24.7
			[b] 2.61			Paris, Margaritis col.; *Traité* 1872
Obols						
Classification by reverse die						
9.	–	9	0.90			Cambridge; *Grose*, 7229
10.	–	10	0.88			New York
11.	–	11	0.91			Cambridge; *SNG Leake*, 3045
12.	–	12	[a] 1.10			Copenhagen; *SNG Cop* (Athens)1
			[b] 0.99			London; *BMC* 19; *Gr. M.*, 13; *Paschalis* 6b; *Seltman* pl. 4i
Hemiobols						
13.	–	13	[a] 0.62			New York
			[b] 0.60			Munich1.10 *Seltman*, Pl. IVk(?)
			[c] 0.52			New York; *Seltman*, Pl. IV, i(?)
			[d] 0.58			Cambridge; *SNG Leake*, 3046
			[e] 0.55			Pozzi 2016; *Boutin*, 4490 (Andros)
			[f] 0.52			New York
Series II.		*AR*	*Obv. Amphora, dolphin.*		*Rev. Incuse square*	
Staters						
Obv. Dolphin r. ascending Rev. Windmill device						
14.	1	14	11.93			Mkt.; *Coin Galleries*, N.Y. 21/2/1990
15.	1	15	[a] 11.80			London, Bank Coll.; *BMC*, 17; *Gr. M.*, 22; *Traité* 1876; *Seltman* pl. 24.2
			[b] 11.70			*Giessener* 33 (1986), 154
16.	1	16	11.34			Berlin; *Gr. M.*,1890. 13 (O. perhaps double struck)

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Obv. Dolphin l. ascending Rev. Diagonal cross						
17.	2	17	10.44			St. Petersberg; *Bröndsted* pl. 27, 3, 4; *Traité* 1879; *Schlessinger* 13 (1935)1084; *Bourgey* 4/3/1960, 61
Obv. Dolphin r. ascending						
18.	3	18	12.00			Paris; *Gr. M.*, 24; *Traité*, 1881: *Seltman* pl. 24.3
Hemidrachms						
Obv. Dolphin descending r. Rev. Six part division						
19.	4	19	2.98			Paris; *Traité*, 1875; *Seltman* pl. 24.4
20.	5	19	[a] 2.99			*Jameson* 1277a; Taranto Hoard, *RN* 1912, 18, nr. 37; *MuM* 76 (1991) 723; *Tradart* 8/11/1992, 92; *Seltman* pl. 24.6
			[b] 3.11			London, Talbot; *Seltman* pl. 24.5
Obv. Dolphin r. ascending Rev. Four segments						
21.	6	20	2.85			Berlin; *Gr. M.*, 23; *Traité* 1877; *Seltman* pl. 24.8
Obv. Dolphin l. ascending						
22.	7	21	3.12			Munich; *Traité*, 1880
23.	8	22	2.59			Berlin, Fox
Blank						
24.	9	–	2.99			Paris; *Gr. M.*, 25
Obols						
Obv. Dolphin r. ascending Rev. St. George cross						
25.	10	23	0.95			London; *BMC*, 22
26.	11	23	0.77			Berlin, Fox
27.	12	23	0.81			Hague 4832
28.	13	24	0.90			Cambridge; *SNG Leake*, 4006
Obv. Dolphin l. ascending, small bunch r.						
29.	14	25	1.12			London, Burgon; *BMC*, 20
30.	14	26	0.89			London, Burgon; *BMC*, 21Doubtful
I			11.40			ex. Rosen; *Leu* 13, 1975, 172; Archaic Coins (Rosen Exhibition, Malibu 1983), 36; *MUM* 72 (1987), 410
II			11.80			New York; *Naville* 10 (1925), 623
Series III.		*AR*	*Obv. Zeus-Aristaeus r.*		*Rev. Sirius r. or l., KAPΘAI*	
31.	15	27	6.62	(12)	22	Cambridge; *SNG Leake*, 4007
32.	16	28	7.64	–	23	Boston; *Brett*, 1288
33.	17	29	8.10	(12)	21	New York

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series IV.			*AE Obv. Amphora, dolphin downwards r.*			*Rev. Bunch of grapes, l., KAP*
34.	18	30	2.20	(6)	15	Berlin, Imhoof-Blumer
Series V.			*AE Obv. Apollo r.*			*Rev. Bunch of grapes, in the field X, Φ and KAPΘ*
35.	19	31	1.42	(1)	12	Berlin, Prokesch-Osten
Series VI.			*AE Obv. Aristaeus r.*			*Rev. Bunch of grapes, KAP*
36.	20	32	1.43	(6)	10	Cambridge; *Grose*, 7240
37.	21	32	0.84	(1)	9	Berlin, Löbbecke
38.	22	32	[a] 1.26	(12)	11	Munich
			[b] 1.00	–	11	Munich
39.	23	32	1.15	(6)	11	Oslo; *Thomsen*, 1239
40.	23	33	1.30	–	12	Kea, from Poiessa
Series VII.			*AE Obv. Dionysos r.*			*Rev. Bunch of grapes, in the field, star, KAPΘA(I)*
Issue 1.						
41.	24	34	6.10	(10)	19	London; *BMC*, 43
42.	25	35	–	–	–	Athens, Manthos Coll.
43.	26	35	5.64	(4)	16	Paris
44.	26	36	5.46	(5)	19	Athens IB'I 558; Tsivourakis 1896-7
Issue 2.						
45.	27	37	5.65	(6)	18	Berlin 252/1886
46.	28	38	4.76	(5)	19	Paris, Boutin 376
47.	28	39	4.57	(5)	19	Athens 668
48.	29	39	–	–	17	Thorvaldsen; *Müller*, 794
49.	30	40	4.19	(5)	17	Paris, Boutin 378
50.	30	41	[a] 6.36	–	18	Athens
			[b] 5.59	(11)	18	Athens 4741
51.	30	42	[a] 6.09	(6)	17	Berlin, Löbbecke
			[b] 5.76	(6)	18	Cambridge; *Grose*, 7239
52.	31	42	4.87	(1)	18	Paris
53.	31	43	5.70	(11)	18	Paris R 1335, Lockett 1959
54.	32	41	4.90	(10)	18	Athens 508
55.	33	41	[a] 4.14	(6)	18	London, Thomas; *BMC*, 42
			[b] –	–	17	Kea, J.L. Caskey purchase
			[c] 4.81	(5)	17	Paris
56.	33	44	3.73	(4)	18	Athens 669 A-E
57.	34	41	5.06	(5)	20	Athens 667 A-E
58.	34	45	5.43	(11)	19	London, Earle Fox
59.	35	41	4.11	(12)	19	Oxford
60.	36	41	5.65	(6)	18	Berlin

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
61.	37	45	4.30	(12)	18	Paris, Boutin 377
62.	37	46	4.87	(11)	18	New York
63.	35	47	5.61	(12)	18	London, Earle Fox
64.	35	48	4.85	(12)	18	Brussels
65.	38	47	7.06	(1)	20	Athens 666 A-E
66.	39	48	7.05	(12)	18	Berlin, Löbbecke
67.	39	49	4.49	(12)	17	Berlin
68.	39	50	[a] 5.40	(1)	20	Munich
			[b] 4.37	(6)	19	Berlin, Prokesch-Osten
			[c] 3.97	(6)	17	Berlin, Imhoof-Blumer
			[d] 3.21	(5)	18	Athens 4743
69.	40	50	[a] 5.14	(5)	20	Athens 4742
			[b] 5.68	(5)	18	Paris, Delepierre
			[c] 6.53	(6)	18	Copenhagen; *SNG Cop*, 629
70.	41	51	5.52	(6)	18	Cambridge; *Grose*, 7238
71.	42	52	4.15	(2)	18	Oslo
72.	43	52	4.14	(12)	17	Copenhagen; *SNG Cop*, 630
73.	43	53	3.43	–	17	Kea, from Poiessa
74.	44	54	4.01	–	20	Weber; *Forrer*, 4638
75.	45	55	3.43	–	18	Kea, from Ioulis

Series VIII. *AE Obv. Apollo r. Rev. Sirius*

Issue 1. Rev. Sirius turned l.; between the rays KAP(ΘA); beneath the dog, a bee

76.	46	56	7.50	(1)	20	Brussels
77.	46	57	6.95	(2)	20	London, Earle Fox
78.	46	58	6.77	(12)	20	New York
79.	46	59	7.17	(12)	20	New York
80.	46	60	7.46	(2)	21	Athens 4741 c
81.	46	61	6.17	(1)	20	Athens
82.	47	61	6.80	–	20	Weber; *Forrer*, 4635
83.	48	61	5.53	(2)	20	Paris
84.	49	61	6.00	(1)	19	Munich
85.	50	61	4.80	(3)	18	Paris, Boutin 382
86.	51	61	[a] 7.28	(2)	21	Athens 664
			[b] 6.55	(2)	22	Paris
			[c] 8.31	(2)	18	Brussels
87.	49	62	–	–	19	Thorvaldsen; *Müller*, 795
88.	49	63	6.19	(12)	21	Berlin, Prokesch-Osten
89.	50	64	4.75	(12)	18	Berlin, Löbbecke
90.	51	65	6.00	(10)	19	Paris, Delepierre
91.	51	66	5.52	(10)	17	Kea, from Karthaia
92.	51	67	6.04	(2)	18	Vienna 14904

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
93.	52	68	[a] 6.85	(2)	20	London, Cameron
			[b] 5.88	(8)	20	Athens 4741 a
			[c] 6.35	(10)	20	Paris
			[d] 4.65	(9)	19	Berlin, Prokesch-Osten
			[e] 6.38	(2)	20	Athens 4741 b
94.	52	69	[a] 6.04	(11)	17	Berlin, Imhoof-Blumer
			[b] 5.76	(12)	18	Oslo, Christiansen
95.	52	70	4.42	(11)	19	Paris
96.	52	71	5.52	(11)	19	Paris, Boutin 371
97.	53	68	7.09	(2)	19	London, Earl Fox
98.	54	72	[a] 8.11	(5)	19	Berlin, Fox
			[b] 6.33	(5)	18	London, Earl Fox
99.	54	73	7.77	(3)	17	Paris
100.	55	72	[a] 6.59	(12)	19	New York
			[b] 5.49	12	19	Paris, Boutin 384
101.	56	74	–	–	20	Kea, from Ag. Eirini
102.	57	75	3.95	(3)	19	Copenhagen; *SNG Cop*, 634
103.	58	76	8.36	(12)	20	Cambridge; *Grose*, 7233
104.	59	77	8.64	(11)	20	Paris
105.	60	78	12.09	(4)	20	Paris
Issue 2.			Above Sirius KAPΘA, r. ΣA;beneath the dog, a bee			
106.	61	79	[a] 5.23	(12)	19	Berlin, Löbbecke
			[b] 5.38	–	18	Athens, Credit Bank; *Walker*, 7611
			[c] 6.09	(12)	20	Cambridge; *Leake, Num. Hel.*, 6.9 (O. countermark: Sirius)
107.	61	80	[a] 6.59	(2)	19	Athens 509
			[b] 6.00	(12)	22	Munich
			[c] 5.46	(12)	20	Hague 4834
108.	61	81	[a] 5.44	(12)	20	Berlin, Imhoof-Blumer
			[b] 6.91	(1)	20	Athens
			[c] 4.74	(12)	19	Paris, Boutin 375
			[d] 6.30	(12)	23	Munich
109.	61	82	4.92	(12)	20	Munich
110.	61	83	4.91	(12)	19	Hague 4835
111.	62	84	5.29	(12)	18	Berlin, Rauch
112.	62	80	[a] 6.39	(1)	18	Berlin, Fox
			[b] 5.59	(1)	20	Cambridge; *Leake, Num. Hel.*, 6.11
			[c] 5.01	(12)	20	London; *BMC*, 41
			[d] 6.33	(2)	20	Paris, Boutin 372
			[e] 5.26	(12)	18	Cambridge
113.	62	81	[a] 6.87	(12)	20	London, Woodhouse; *BMC*, 40
			[b] 6.23	(1)	20	Oxford
			[c] 4.32	(12)	20	Cambridge; *Leake, Num. Hel.*, 155.5

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
			[d] 6.02	–	20	Weber; *Forrer*, 4636
			[e] 6.40	–	–	Glasgow; *McDonald*, 1
114.	62	82	[a] 5.57	(12)	18	Paris
			[b] 5.06	(12)	18	Paris, Boutin 373
			[c] 5.24	(1)	22	Paris
			[d] 5.36	(6)	21	Karlsrouhe
			[e] 5.61	(12)	20	Cambridge; *Leake, Num. Hel.*, 6.10
			[f] 4.84	(11)	20	Munich
			[g] 4.90	(1)	18	Paris, Boutin 374
			[h] 4.76	(1)	18	Stuttgart MK 17974
115.	63	85	4.29	(12)	24	Oslo (O. attempt of countermarking? R. legend not visible)
116.	64	86	–	–	–	Venice
117.	65	87	4.91	(12)	17	Copenhagen; *SNG Cop*, 633
Issue 3.			Sirius to the r.; above KAPΘA(I); beneath the dog, a bee			
118.	66	88	5.27	–	16	Athens, Credit Bank; *Walker*, 762 M
119.	66	89	4.24	(12)	16	New York
120.	66	90	4.60	(1)	17	Athens IB' 557, Tsivourakis 1896-7
121.	66	91	[a] 3.48	(1)	15	Paris
			[b] 2.99	(12)	16	Paris
122.	66	93	[a] 4.30	(1)	15	New York
			[b] 4.40	–	15	Weber; *Forrer*, 4637
123.	67	93	3.23	(3)	15	Berlin, Löbbecke
124.	67	94	4.34	(12)	16	Berlin, Imhoof-Blumer
125.	67	95	4.07	(12)	15	Berlin, Fox
126.	67	96	4.66	(12)	15	London; *BMC*, 45
127.	67	97	[a] 4.98	(12)	16	London; *BMC*, 41
			[b] 3.10	(1)	16	Paris, Delepierre
128.	67	98	5.71	(12)	17	Munich
129.	67	99	4.76	(12)	15	Paris
130.	68	93	4.30	(12)	16	Paris, Lockett 1959
131.	68	100	4.69	(12)	17	Athens 4744
132.	68	101	5.67	(12)	17	Brussels
133.	68	102	3.04	(12)	15	Hague 4837
134.	69	103	3.18	(12)	16	Berlin, Prokesch-Osten
135.	70	104	4.37	(12)	17	Kea, from Karthaia
136.	71	105	4.21	–	15	Glasgow; *McDonald* 2
137.	72	106	2.97	(9)	15	Hague 4836
138.	73	107	1.77	(12)	10	Kea, from Karthaia
Issue 4.			Sirius to the r.; beneath KAPΘAI, l. M			
139.	74	108	5.43	(11)	19	Oxford
140.	74	109	4.92	(11)	19	Berlin, Ross
141.	74	110	5.39	(11)	19	Oslo
142.	75	108	[a] 6.42	(12)	20	Berlin, Imhoof-Blumer
			[b] 3.88	(10)	15	Paris
			[c] 4.66	(11)	18	Cambridge; *Grose*, 7237

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
143.	75	111	5.42	(12)	20	Cambridge
144.	75	112	[a] 6.13	(10)	15	Paris
			[b] 6.18	(10)	20	Paris
			[c] 4.89	(11)	19	Paris, Boutin 380
145.	75	113	4.97	(12)	19	London, Borrell, 1832; *BMC*, 39
146.	75	114	4.29	(12)	20	Berlin, Löbbecke
147.	75	115	[a] 5.62	(11)	17	Athens 665
			[b] 4.24	(11)	15	Paris
148.	75	116	7.54	(11)	19	Hague 4833
149.	76	115	[a] 4.89	(12)	18	Paris, Boutin 383
			[b] 4.66	(11)	20	Munich
150.	77	117	5.60	(12)	20	Cambridge; *Leake, Num. Hel.*, 6.12
151.	78	118	9.49	(12)	20	Copenhagen; *SNG Cop*, 631
152.	79	119	4.70	(12)	10	Copenhagen *SNG Cop*, 632
Issue 5.			Obv. Dionysus (?) r. Dotted circle. Rev. Sirius r., a bee, KAPΘ. Dotted circle			
153.	80	120	[a] 3.93	(1)	17	Munich
			[b] 7.18	(12)	20	Berlin, Fox
Issue 6.			Obv. Male (?) head r. Rev. Sirius l. KA retrograde			
154.	81	121	1.45	(4)	11	Paris
Series IX.		*AE*	*Obv. Aristaeus r.*	*Rev. Sirius, K A P*		
155.	82	122	4.10	(9)	16	Paris
156.	82	123	4.05	(7)	16	Atzeritis Find (same O. as KEIΩN 27)
157.	83	124	4.98	(8)	17	Paris (O. as KEIΩN 15)
Series X.		*AE*	*Obv. Aristaeus r., in a dotted circle.*		*Rev. Bee, KAPΘ; in a dotted circle*	
158.	84	125	[a] 2.40	(2)	15	Athens 4745
			[b] 4.20	(9)	16	Paris
159.	84	126	2.13	–	14	Kärnten 2250
Series XI.		*AE*	*Obv. Aristaeus r.*	*Rev. 8-rays star, between the rays KAPΘA*		
160.	85	127	–	–	11	Kea, J.L. Caskey purchase
161.	85	128	1.65	–	13	Princeton 76-111, T.L. Shear
162.	86	127	1.53	–	13	Berlin
163.	86	129	[a] 1.75	–	14	Paris R-1333, Lockett
			[b] 1.98	–	14	Berlin
			[c] 1.52	–	15	Berlin, Imhoof-Blumer
164.	86	130	[a] 1.45	–	13	New York
			[b] 3.69	(9)	13	Athens 4745 b
			[c] 1.87	(12)	17	London; *BMC*, 46
			[d] 1.81	(6)	14	Cambridge; *Leake, Num. Hel.*, 6.13
165.	87	131	2.22	–	14	Munich
166.	87	132	2.13	(12)	18	Munich
167.	87	133	2.31	(3)	10	Paris
168.	88	132	[a] 2.47	(2)	11	London, Maurogordato
			[b] 2.57	(12)	12	Kea, Atzeritis Find
169.	89	133	1.74	(1)	10	Paris
170.	90	134	3.19	(12)	13	Copenhagen; *SNG Cop*, 635
171.	91	135	1.80	(12)	15	Oslo
172.	92	136	1.20	(12)	11	Copenhagen; *SNG Cop*, 636
173.	93	137	1.32	–	11	Stuttgart MK 17978

MINT OF THE KOINON OF THE KEIANS

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Series I.		*AE*	*Obv. Aristaeus r.*	*Rev. Bunch of grapes, KEI*		
1.	1	1	1.50	(12)	12	Berlin, Prokesch-Osten
2.	2	1	1.25	–	10	Munich
3.	3	2	1.39	(1)	10	Paris
4.	4	2	1.60	–	12	Kärnten 2246
5.	5	3	1.32	(1)	11	London, Borrell
6.	6	3	[a] 1.46	(3)	10	Paris R 1351, Lockett
			[b] 1.81	(3)	10	Vienna 14032
7.	6	4	[a] 1.11	(9)	11	Vienna 14907
			[b] 1.50	(9)	10	Cambridge; *Leake, Num. Hel.*, 7.5
8.	7	5	[a] 1.27	(6)	11	Berlin, Friedlaender
			[b] 2.10	(6)	11	Paris R 1330, Lockett
9.	8	6	1.89	(12)	12	Berlin, Imhoof-Blumer
10.	9	7	1.31	(6)	12	Berlin, Ross
11.	10	8	1.42	–	11	Weber; *Forrer*, 4639
12.	11	9	1.57	(12)	11	Copenhagen; *SNG Cop*, 626
Series II.		*AE*	*Obv. Aristaeus.*	*Rev. Sirius*		
Issue 1.		Rev. KEIΩN				
13.	12	10	–	–	16	Glasgow; *McDonald*, 1
14.	12	11	4.39	(9)	18	Athens, 30/1985
15.	12	12	[a] 4.01	(11)	17	Berlin, Imhoof-Blumer
			[b] 4.33	(10)	19	Paris (O. the same as Karthaia 157)
16.	13	13	4.18	(9)	15	Paris, Delepierre
17.	13	14	[a] 3.69	(7)	16	Berlin, Rauch
			[b] 3.35	(10)	15	Paris
			[c] 4.85	(3)	16	Paris, Boutin 361
			[d] 4.68	(3)	16	New York
18.	13	15	3.83	(12)	18	Konstantinople 3678
19.	13	16	5.24	(12)	18	Berlin, Ross
20.	13	17	–	–	17	Kea, Ag. Eirini B 354 (Rev. restruck)
21.	13	18	4.25	–	17	Vaud 873
22.	14	18	[a] 4.37	(3)	15	Paris
			[b] 3.73	(6)	16	Munich
			[c] 3.71	(5)	18	London; *BMC*, 1
			[d] 4.02	(6)	15	Berlin, Löbbecke
			[e] 4.81	(6)	18	Berlin, Friedlaender
23.	14	19	[a] –	–	14	Kea, Ag. Eirini Φ. KA 532 (9-14)
			[b] 4.31	(5)	16	Berlin, Fox
24.	14	20	[a] 4.74	(1)	16	Kea, Atzeritis Find
			[b] 4.31	(6)	16	Paris, Boutin 370

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
Issue 2.		Rev. Between the rays of Sirius KEI				
25.	15	21	[a] 3.88	(12)	17	New York
			[b] 3.93	–	17	Athens, Credit Bank; *Walker*, 757 M
26.	15	22	–	–	16	Kea, Ag. Eirini M490
27.	15	23	3.69	–	16	Weber; *Forrer*, 4632 (O. the same as Karthaia 155, 156)
28.	16	24	3.87	(6)	15	Paris
29.	16	25	5.20	–	17	Vaud 874
30.	17	25	4.09	(11)	16	Paris
31.	16	26	[a] 4.12	(10)	16	Hague 4828
			[b] 3.97	(11)	16	Hungary
32.	16	27	3.98	(12)	15	Oslo, Münter 2006
Issue 3.		Rev. KE IΩN symetrically to the Sirius				
33.	18	28	3.69	(11)	14	Paris, Delepierre
34.	18	28	[a] 3.61	(12)	17	Berlin, Fox
			[b] 3.14	(11)	17	Athens IB'I 554, Tsivourakis1896-7
35.	18	29	[a] 4.46	(1)	17	Kea, Atzeritis Find
			[b] 3.54	(1)	16	Vienna 14900
			[c] 4.40	(2)	16	Cambridge; *McLean*, 733
36.	18	30	4.66	–	18	Weber; *Forrer*, 4634
37.	18	31	3.52	(12)	16	Cambridge; *Grose*, 7252
38.	18	32	3.79	–	17	Berkeley, Lowie 8-8073, Lindgren
39.	18	33	4.14	(12)	15	Copenhagen; *SNG Cop*, 624
40.	18	34	[a] 3.03	(2)	17	Athens 1910-11
			[b] 3.78	(12)	17	Berlin, Imhoof-Blumer
			[c] 4.55	–	16	Athens, Credit Bank; *Walker*, 759 M
41.	18	35	3.16	(12)	18	Athens IB'I 555, Tsivourakis 1896-7
Issue 4.		Rev. KEI beneath Sirius or between his rays				
42.	19	36	3.12	(7)	15	Paris
43.	19	37	4.11	(6)	16	Cambridge; *Leake, Num. Hel.*, 6.8
44.	19	38	5.10	(11)	17	Athens 4736
45.	19	39	3.36	(5)	15	Paris
46.	19	40	3.14	(12)	15	Paris, Boutin 366
47.	20	41	4.24	(6)	17	Vienna 14905
48.	20	42	–	(12)	18	Thorvaldsen; *Müller*, 783
49.	21	43	4.72	(1)	15	Paris
50.	22	44	3.40	(5)	16	Munich
51.	22	45	2.58	(5)	17	London, Earle Fox
Issue 5.		Rev. Beneath Sirius KEI				
52.	23	46	[a] 4.11	(12)	17	New York
			[b] 3.10	(12)	17	Oslo, Christiansen

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
53.	23	47	[a] 3.63	(10)	17	Berlin, Dannenberg
			[b] 4.90	(5)	18	London; *BMC*, 3
54.	23	48	3.55	(3)	18	Berlin, Ross
55.	23	49	4.55	(6)	17	Berlin, Prokesch-Osten
56.	23	50	4.02	(7)	18	Athens
57.	23	51	4.09	(11)	15	Paris
58.	24	52	3.43	(6)	17	Oxford, Baldwin
59.	24	53	4.64	(4)	16	Vienna 14903
Issue 6.		Rev. KEI between the rays of Sirius				
60.	25	54	[a] 4.26	(12)	16	London, Woodhouse; *BMC*, 4
			[b] 3.11	(12)	16	Oxford, Milne
61.	25	55	4.02	–	17	Athens, Credit Bank; *Walker*, 758 M
62.	25	56	4.17	(12)	16	Munich
63.	25	57	4.35	(12)	16	Berlin, Prokesch-Osten
64.	25	58	3.34	(12)	17	New York
65.	25	59	3.65	(12)	16	London, Maurogordato
66.	25	60	3.81	(12)	15	Athens 4737
67.	25	61	3.46	(12)	16	Cambridge; *Grose*, 7234
68.	25	62	2.90	(12)	17	Cambridge
69.	26	63	3.41	(12)	16	Kea, Atzeritis Find
70.	27	64	3.61	(11)	15	Kea, Atzeritis Find
71.	28	65	3.88	(2)	17	Kea, Atzeritis Find
72.	28	66	[a] 4.06	(11)	17	Cambridge; *Leake, Num. Hel.*, 7.4
			[b] 4.01	(10)	18	Athens
			[c] 4.38	(10)	18	Berlin, Imhoof-Blumer
			[d] 3.57	(11)	16	Kea, Atzeritis Find
			[e] 4.61	(11)	15	Kea, Atzeritis Find
73.	28	67	5.20	(2)	17	Munich
74.	29	67	2.66	(2)	15	London; *BMC*, 5
75.	30	66	[a] 2.74	–	16	Athens, Credit Bank; *Walker*, 760 M
			[b] 3.52	(4)	14	Kea, Atzeritis Find
76.	30	68	3.33	(4)	14	Paris, Delepierre
77.	31	66	[a] 3.03	(10)	15	Vienna 14902
			[b] 4.42	(10)	15	Paris, Delepierre
78.	31	67	3.22	(2)	17	Constantinople 98A-259
79.	31	69	2.60	(12)	15	Berlin, Löbbecke
80.	32	67	[a] 3.62	(1)	17	Berlin, Ross
			[b] 4.41	(2)	15	Paris
81.	32	70	4.89	(6)	15	Berlin, Fox
82.	33	67	3.88	(4)	15	Paris
83.	33	66	4.17	(10)	16	Kea, Atzeritis Find
84.	34	71	3.86	(2)	16	Copenhagen; *SNG Cop*, 623
85.	35	72	3.57	(6)	15	Oxford, New College
86.	36	73	3.07	(3)	14	Athens 4739
87.	37	74	3.40	–	15	Glasgow; *McDonald*, 2

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
88.	38	75	2.33	–	14	Glasgow; *McDonald*, 3
89.	39	76	3.19	(3)	–	Manchester
90.	40	77	3.40	(12)	13	Kea, Atzeritis Find
Issue 7.		Rev. KEI beneath the Sirius or between his rays				
91.	41	78	[a] 3.37	(5)	17	Athens 662 A-E
			[b] 3.70	(4)	17	Berlin, Friedklaender
			[c] 3.84	(3)	18	Oxford, Oman
92.	41	79	3.30	(1)	16	Berlin, Ross
93.	42	80	2.88	(5)	17	London
94.	43	81	3.04	(5)	17	Paris 11726
95.	43	82	3.91	(6)	16	London, Woodhouse
96.	43	83	4.06	(12)	16	Berlin 21374
97.	44	84	–	(6)	17	Thorvaldsen; *Müller*, 782
98.	44	85	4.67	(12)	17	Berlin, Löbbecke
99.	44	86	[a] 3.41	(12)	17	New York
			[b] 2.42	(12)	16	Berlin, Old Collection
			[c] 3.67	(12)	15	Oslo, Christiansen
100.	44	87	3.93	(12)	16	Hague 4829
101.	44	88	1.40	(12)	16	Berlin, Prokesch-Osten
102.	44	89	3.33	–	17	Vienna, Stiftes-Schotten; *Hübl III*, 2727
103.	44	90	2.30	–	15	Vienna, Stiftes-Schotten; *Hübl III*, 2727
Issue 8.		Obv. Aristaeus l. In the field r. Ɛ				
104.	45	91	5.12	(10)	16	Vienna 14906
105.	45	92	4.12	(11)	15	Oxford
106.	45	93	3.80	(5)	16	London, Thomas; *BMC*, 7
107.	45	94	[a] 3.66	(12)	17	Berlin, Löbbecke
			[b] 4.38	(11)	15	Paris
108.	45	95	3.43	(6)	16	Hague 4830
109.	45	96	3.01	(11)	14	Kea, Karthaia
110.	45	97	4.22	(12)	15	Hague 4831
111.	45	98	4.24	(5)	15	Athens 4740 A
112.	45	99	[a] 4.21	(5)	17	Berlin, Fox
			[b] 4.06	(11)	17	Paris, Boutin 363
			[c] 3.65	(3)	17	Paris
113.	45	100	4.52	(4)	17	Karlsrouhe
114.	45	101	4.22	(6)	17	Berlin, Löbbecke
115.	45	102	4.34	(12)	16	Cambridge; *Grose*, 7250
116.	45	103	3.36	–	19	Vienna, Stiftes-Schotten; *Hübl* III, 2730
117.	45	104	3.18	(12)	15	Cambridge; *Grose*, 7251
Issue 9.		Obv. Aristaeus with radiate hair. Rev. K EI				
118.	46	105	4.37	(7)	11	Kea, Atzeritis Find

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
119.	46	106	[a] 4.38	(6)	18	London, Hawkins; *BMC*, 8
			[b] 4.11	(6)	17	Munich
			[c] 4.15	(6)	17	Paris, Boutin 365
120.	47	106	[a] 3.51	(1)	15	Paris
			[b] 4.54	(12)	15	Paris
			[c] 4.63	(8)	15	Kea, Atzeritis Find
121.	47	107	[a] 3.96	(6)	17	Berlin, Imhoof-Blumer
			[b] 3.04	(6)	17	Munich
			[c] 4.23	(12)	16	London, Woodhouse; *BMC*, 9
122.	47	108	3.62	(12)	15	Paris
123.	47	109	4.43	(2)	15	Paris
124.	47	110	3.41	(7)	16	Vienna 14901
125.	47	111	3.18	–	16	Naples; *Fiorelli*, 12369
126.	47	112	4.27	(12)	16	Copenhagen; *SNG Cop*, 622
Issue 10.		Rev. K E				
127.	48	113	4.06	(12)	17	Berlin
128.	48	114	3.87	(10)	16	Athens 4741
129.	48	115	3.79	(11)	15	New York
130.	48	116	3.55	(12)	16	London, Woodhouse; *BMC*, 2
131.	48	117	4.18	(3)	17	Paris, Boutin 364
132.	49	118	3.75	(12)	14	Berlin 6707
133.	50	119	3.03	(2)	15	Aarhus; *SNG Aarhus*, 688
134.	51	120	3.86	(12)	–	Copenhagen; *SNG Cop*, 623
135.	52	121	3.50	(4)	15	Tenos 65.CII 21.76/354 *Ténos I*, 498, Pl. 156
Issue 11.		No traces of the inscription				
136.	53	122	3.50	(12)	16	London, Combe; *BMC*, 6
137.	53	123	3.84	–	17	Vienna, Stiftes-Schotten; *Hübl III*, 2727
138.	54	124	3.52	(6)	16	Berlin, Ross
139.	55	125	4.10	(1)	16	Brussels II. 63. 328, L. de Walsche
Series III.		*AE*	*Obv. Aristaeus r.*	*Rev. 8-rays star, KEI*		
140.	56	126	2.12	(3)	14	London; *BMC*, 10
141.	56	127	1.59	–	13	Berlin, Fox
142.	56	128	1.60	(4)	14	London; *BMC*, 11
143.	57	128	2.18	(2)	12	Paris
144.	58	129	1.80	–	13	Berlin, Imhoof-Blumer
145.	58	130	1.93	–	15	Munich
146.	59	131	1.40	–	15	Vienna, Stiftes-Schotten; *Hübl III*, 2731
147.	60	132	2.07	–	13	Hague KAW 107/134
148.	61	133	2.98	–	13	Cambridge; *Grose Add.*, 7334
149.	62	134	[a] 2.36	–	14	Kärnten 2245
			[b] 2.45	(1)	15	Paris
150.	63	135	1.85	(9)	12	Copenhagen; *SNG Cop*, 625

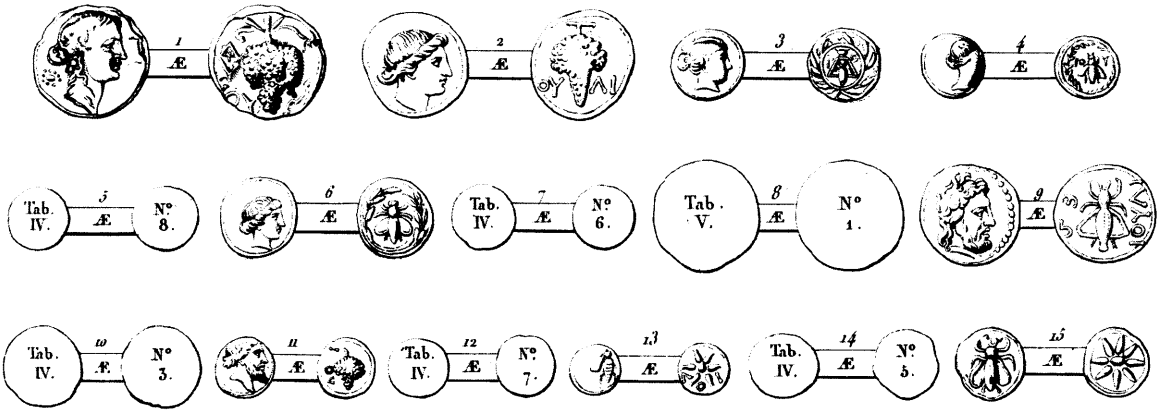
IMPERIAL PERIOD

No	*Obv.*	*Rev.*	*Weight*	*Axe*	*Diameter*	
	AE Obv. Augustus, CEBACTOC. Rev. Apollo Kitharodos, KEIΩN					
151.	64	136	4.87	(12)	19	Oslo, Christiansen

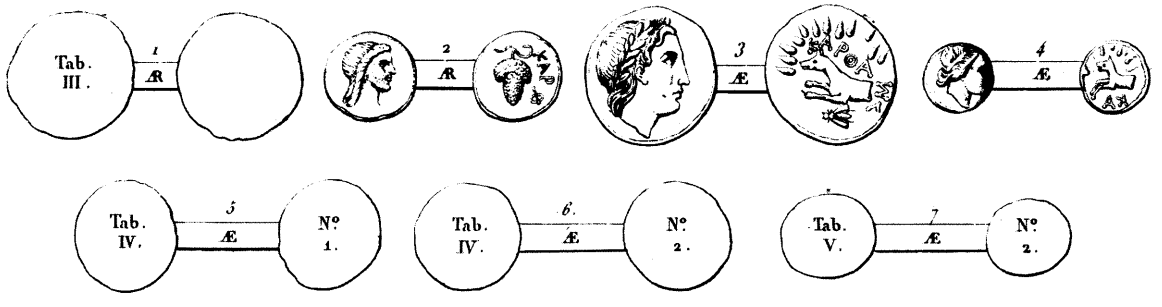
I. E nummis autonomis Τοῦ κοινοῦ CEORUM duo rariores .

II. Nummi *certæ sedis* quatuor civitatum CEI insulæ .

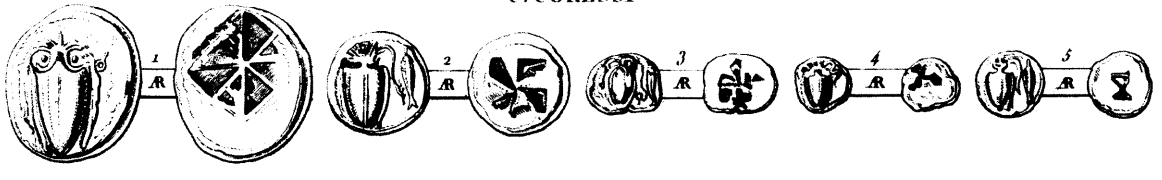
a . IVLIDIS .



b . CARTHÆÆ .



c . CORESSI



P. O. Bröndsted, *Reisen und untersuchungen in Griechenland*, Paris 1826.

PLATES

KORESIA

1

3

4b

5a

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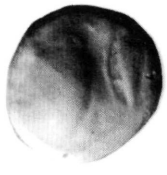
9b



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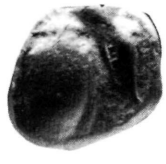

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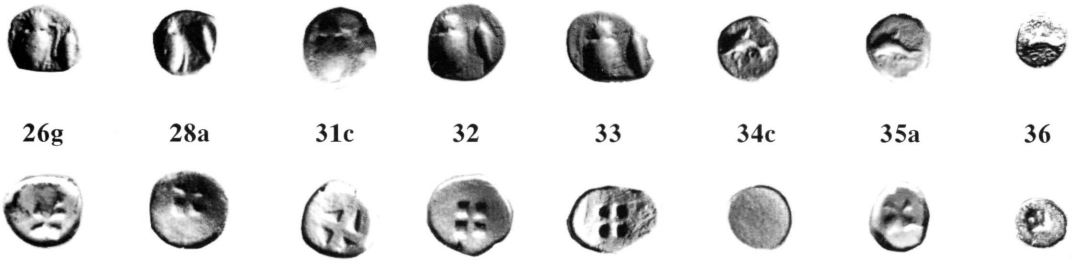
15a

16

17

18 19 21 22 24



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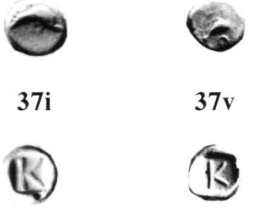

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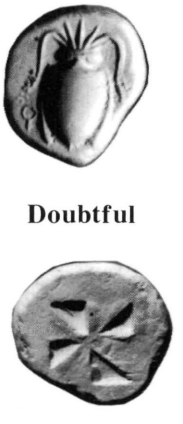

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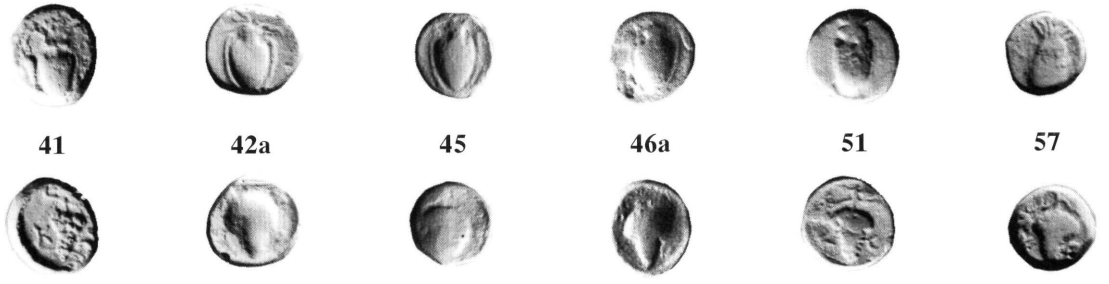

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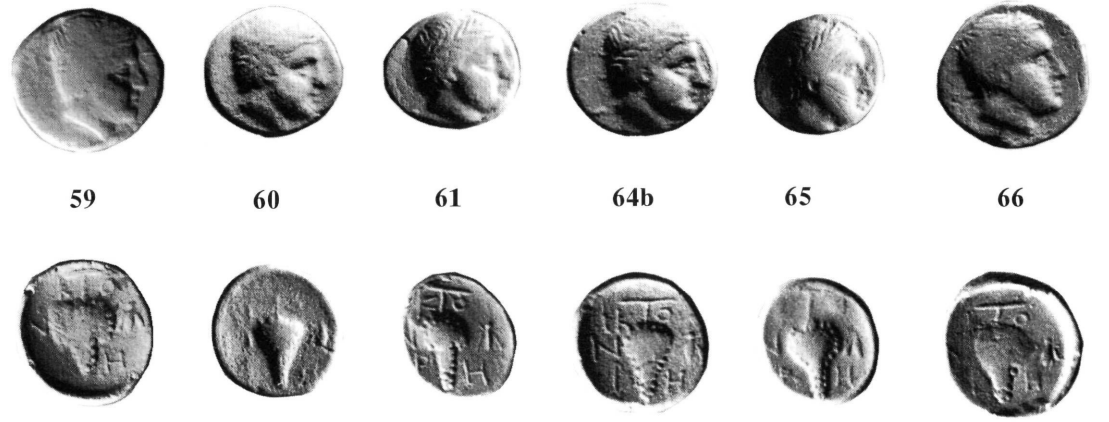

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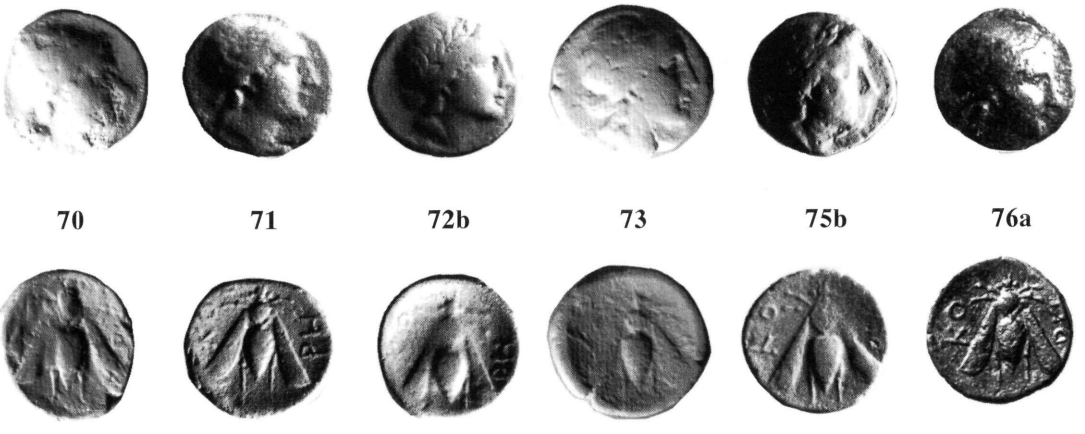

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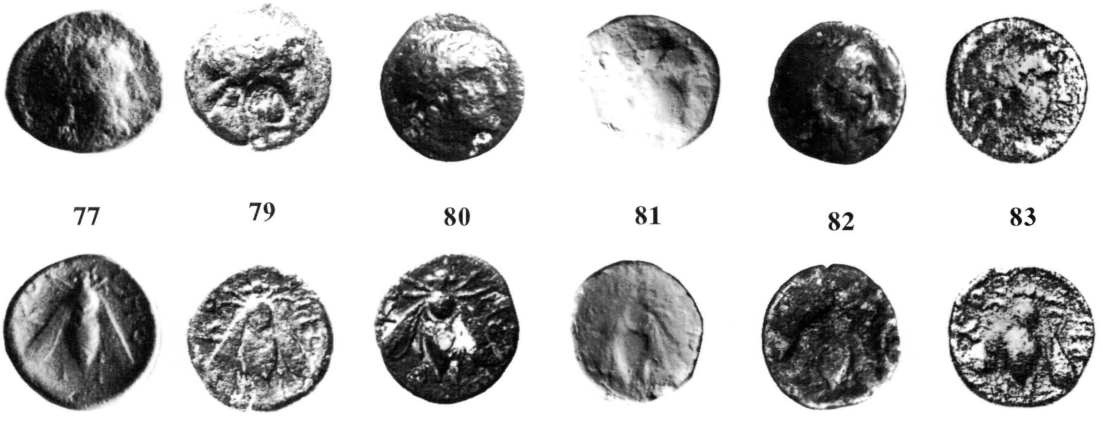

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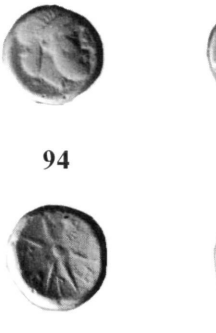

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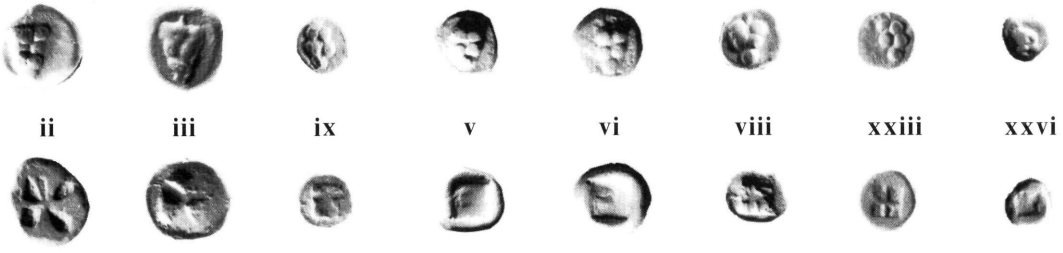

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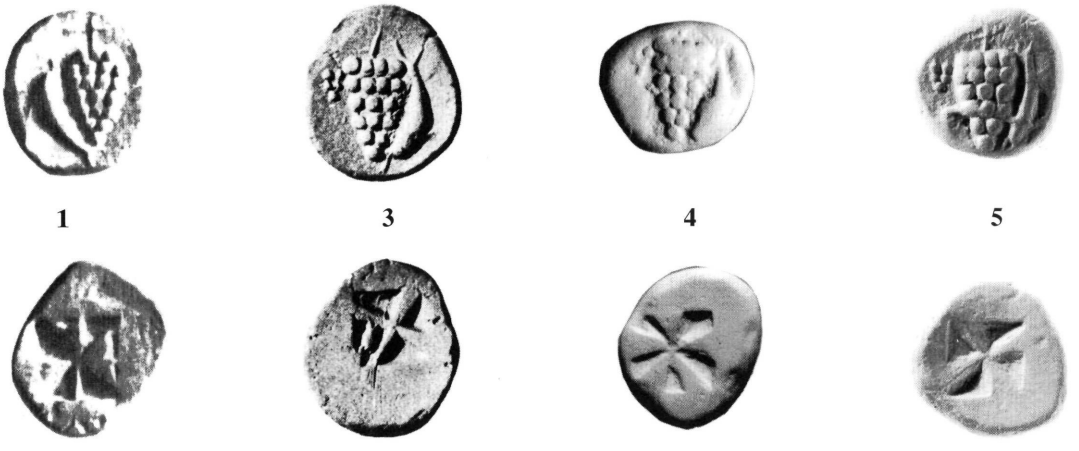

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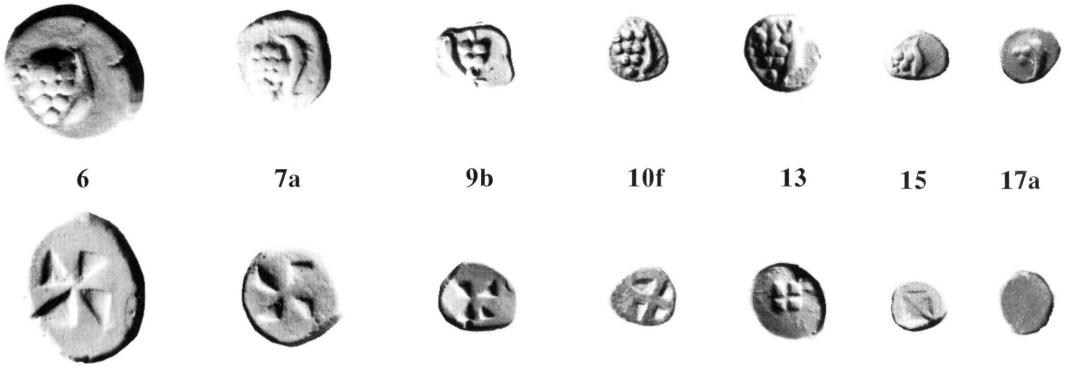

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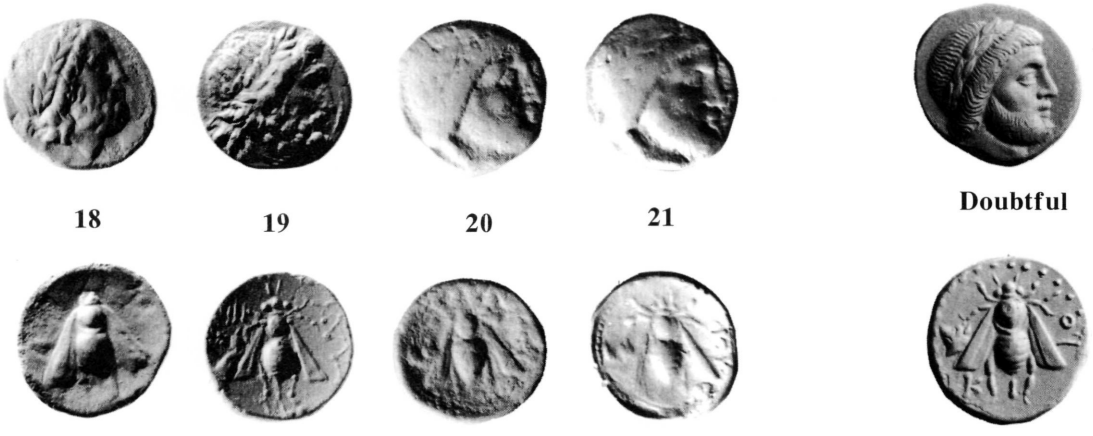

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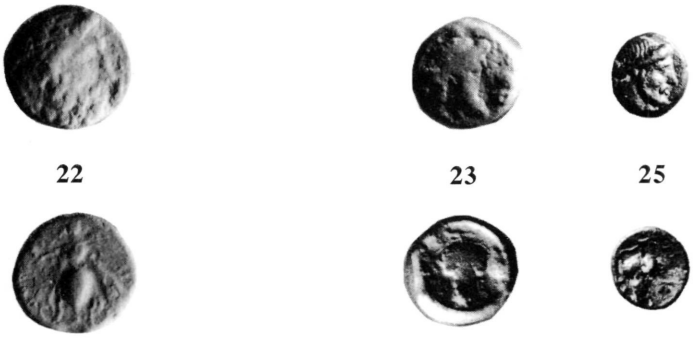

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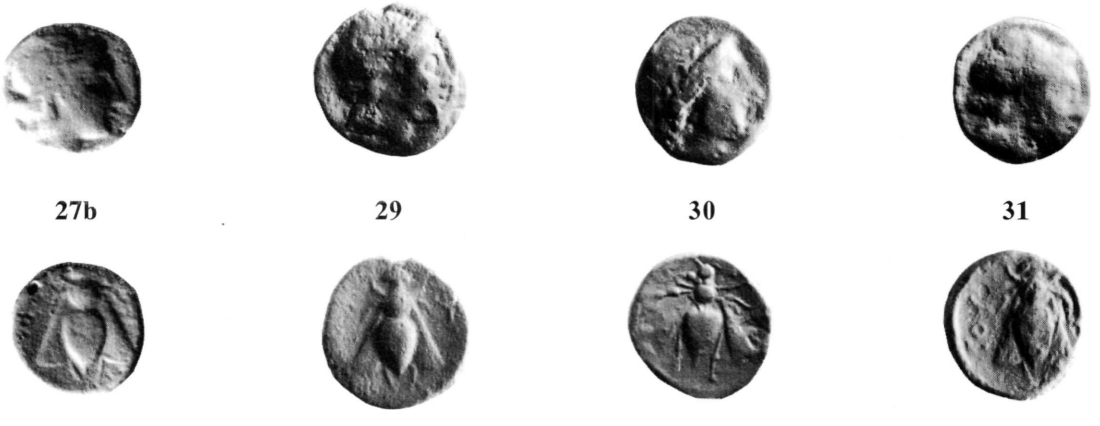

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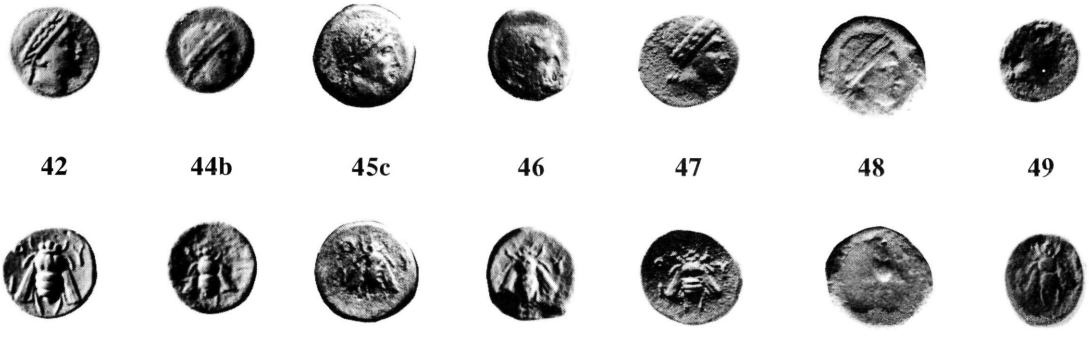

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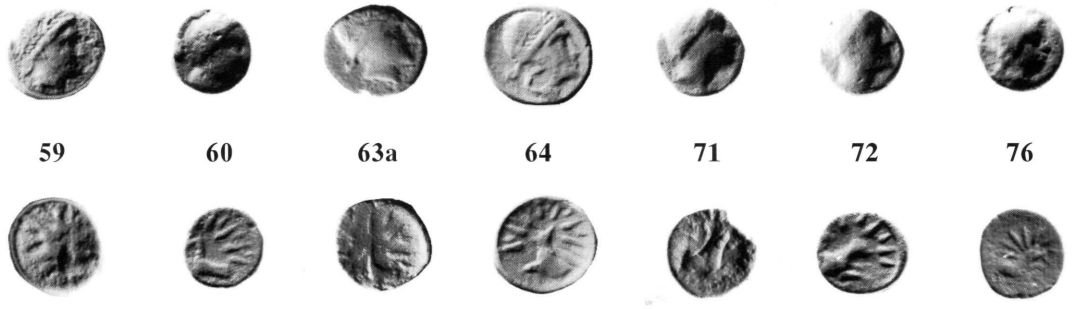

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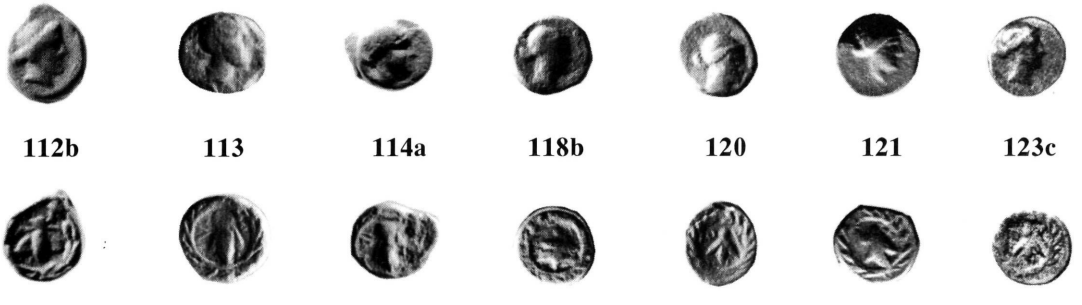

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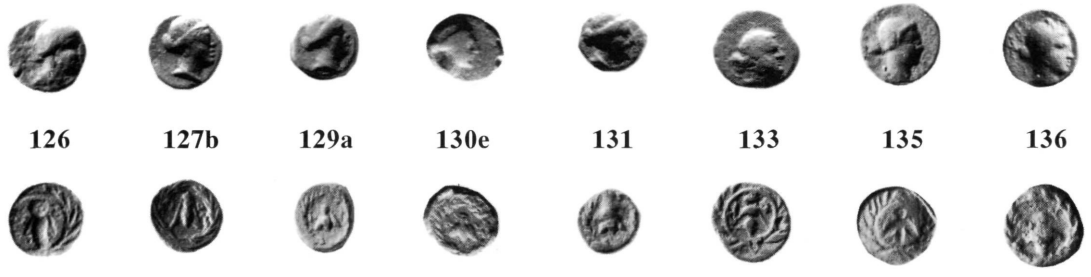

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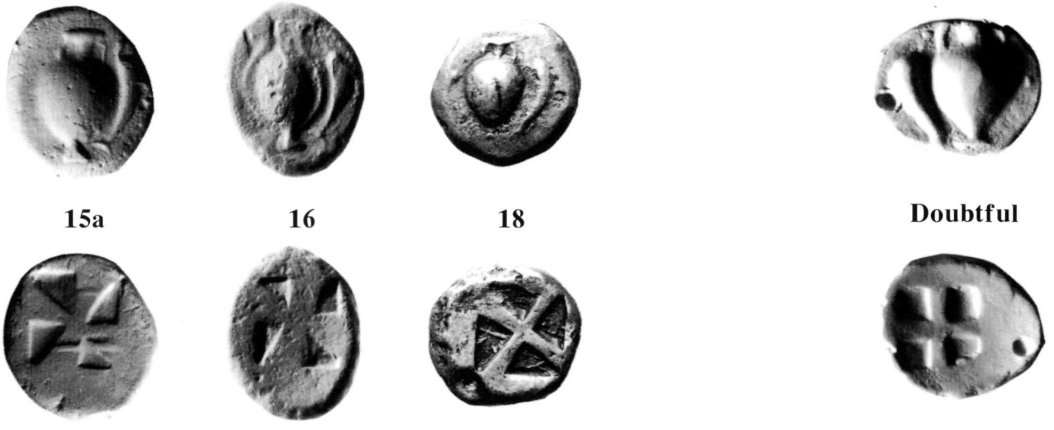

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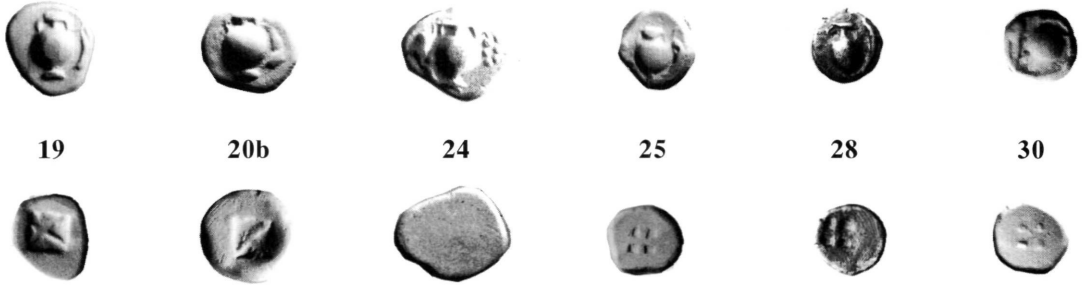

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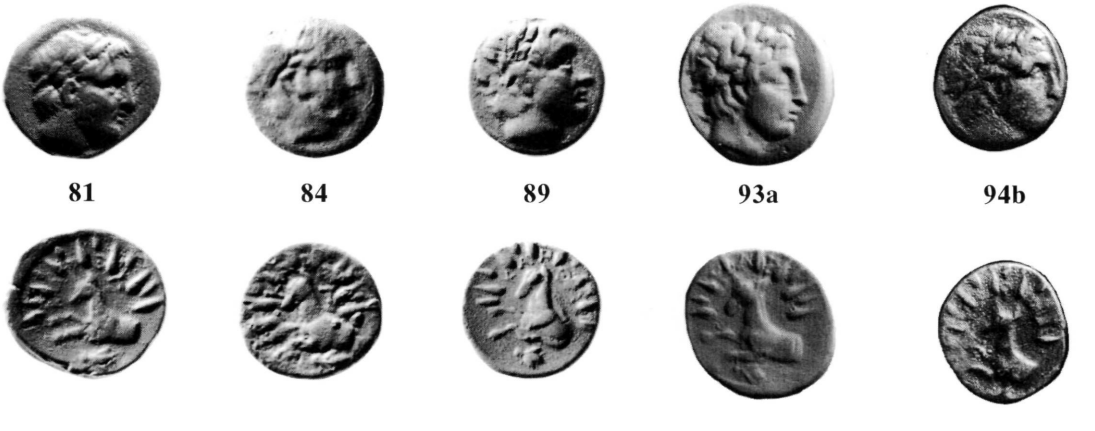

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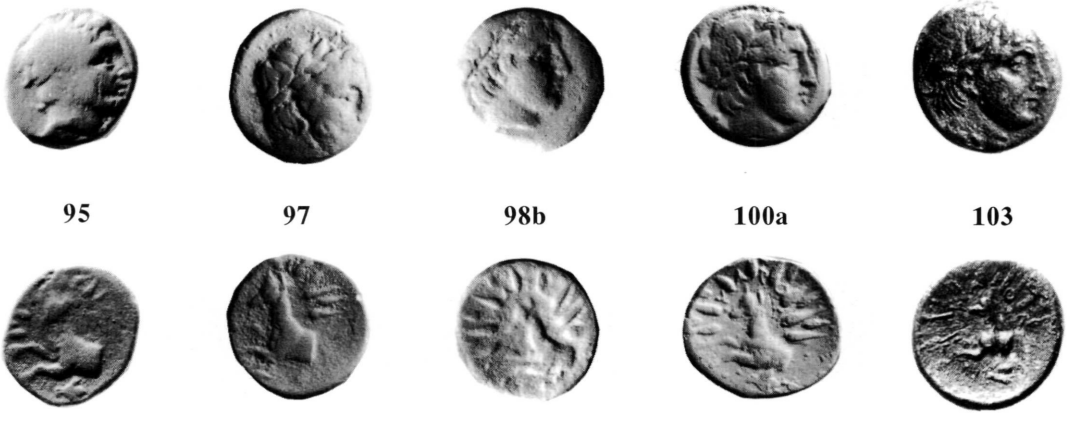

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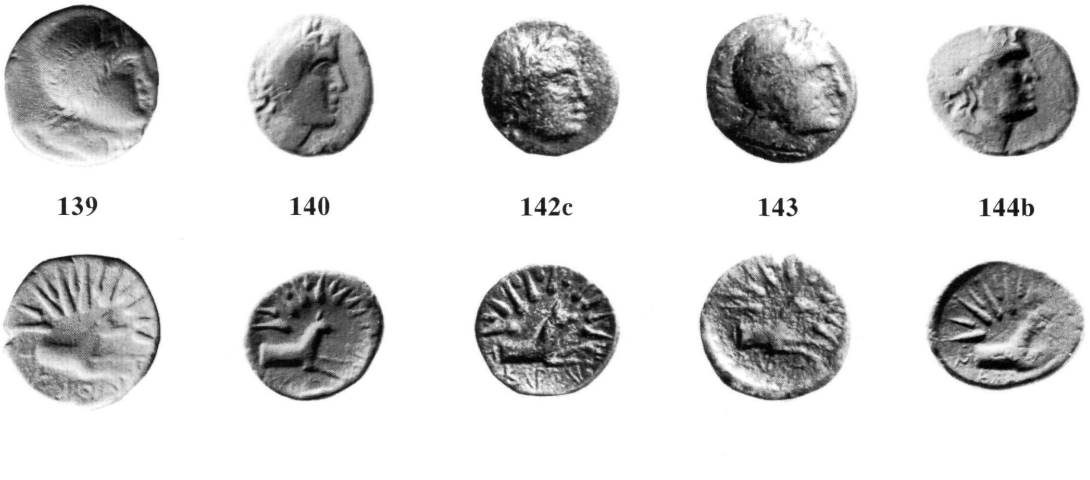

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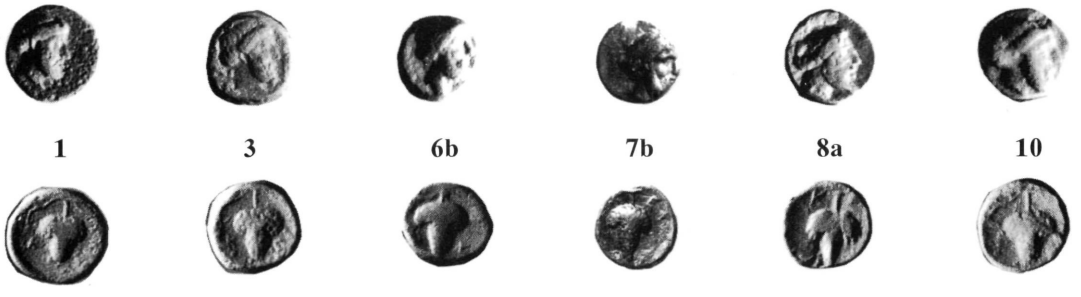

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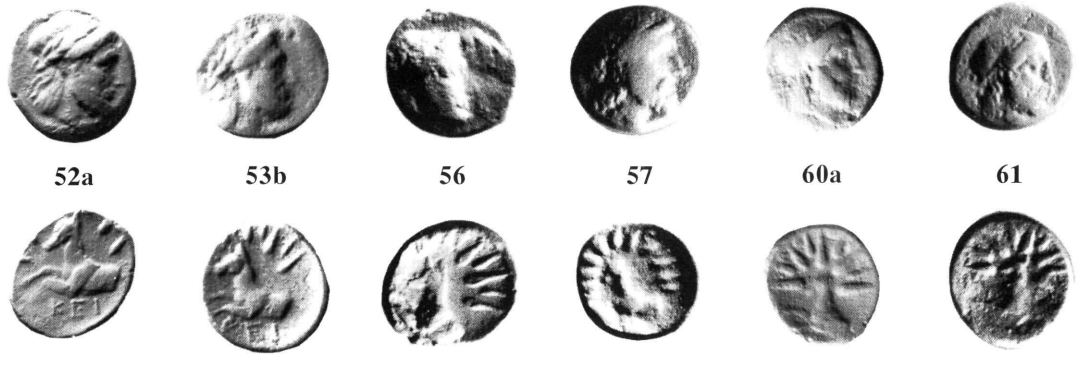

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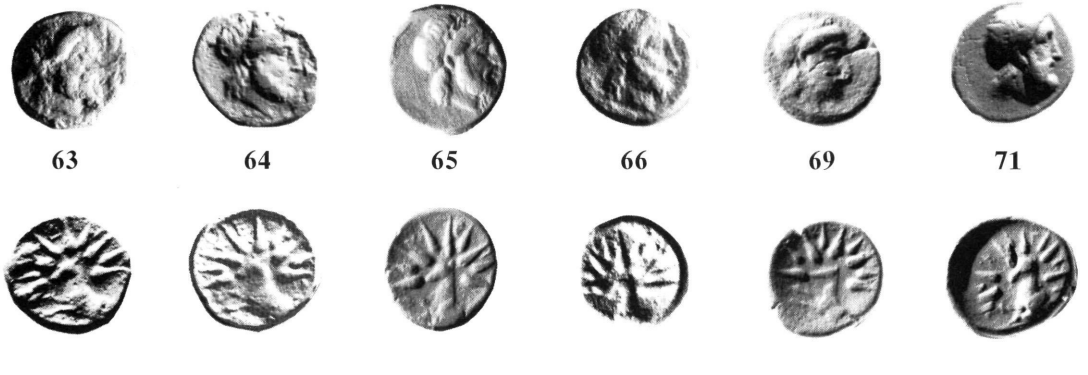

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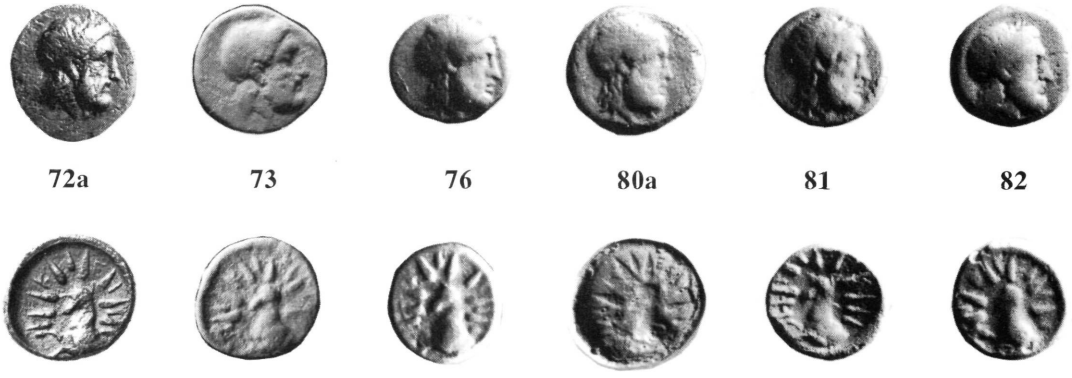

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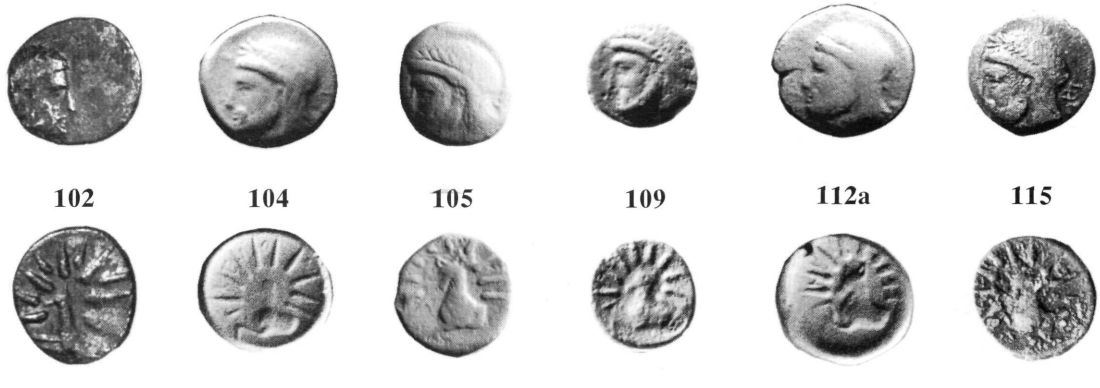

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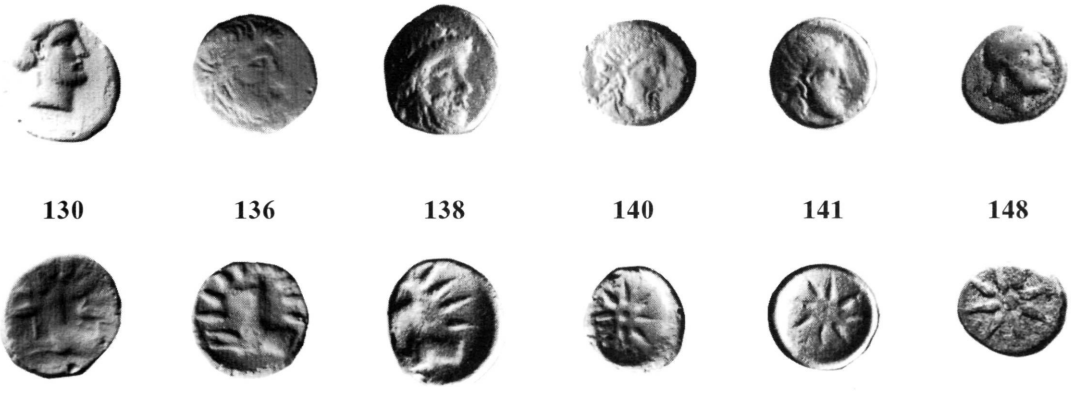

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IMPERIAL PERIOD

151

A. D. Rizakis (Hrsg.), *Achaia und Elis in der Antike* (ΜΕΛΕΤΗΜΑΤΑ 13; Athens 1991)

M. B. Hatzopoulos, *Actes de vente d'Amphipolis* (ΜΕΛΕΤΗΜΑΤΑ 14; Athènes 1991)

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Ph. Gauthier - M. B. Hatzopoulos, *La loi gymnasiarchique de Béroia* (ΜΕΛΕΤΗΜΑΤΑ 16; Athènes 1993)

Y. E. Meimaris, K. Kritikakou, P. Bougia, *Chronological Systems in Roman-Byzantine Palestine and Arabia* (ΜΕΛΕΤΗΜΑΤΑ 17; Athens1992)

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A. D. Rizakis, *Achaïe I. Sources textuelles et histoire régionale* (ΜΕΛΕΤΗΜΑΤΑ 20; Athènes 1995)

A. D. Rizakis (éd.), *Roman Onomastics in the Greek East: Social and Political Aspects. Proceedings of the International Colloquium on Roman Onomastics, Athens, 7-9 September 1993* (ΜΕΛΕΤΗΜΑΤΑ 21; Athènes 1996)

M.B. Hatzopoulos, *Macedonian Institutions under the Kings. I. A Historical and Epigraphic Study; II. Epigraphic Appendix* (ΜΕΛΕΤΗΜΑΤΑ 22; Athènes 1996)

G. Le Rider, *Monnayage et finances de Philippe II: Un état de la question* (ΜΕΛΕΤΗΜΑΤΑ 23; Athènes 1996)

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